Working Paper No. 04

PROMINSTAT

Possibilities and limitations of comparative quantitative research on international migration flows

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February 2010

Promoting Comparative Quantitative Research in the Field of Migration and Integration in Europe (PROMINSTAT)

Project funded by the European Commission, DG Research Sixth Framework Programme, Priority 8

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Acknowledgements

This report was prepared within the project *Promoting Comparative Quantitative Research in the field of Migration and Integration in Europe* (PROMINSTAT), financed under the Sixth Framework Programme of the European Community, contract number CIT5-CT-2006-028972. Most information was collected in 2008 and early 2009 The authors are grateful to all persons and institutions which provided information concerning datasets and administrative procedures in their countries. In particular, we would like to thank the following persons from national statistical offices: Daniel Chytil (Czech Republic), Kathryn Carty (Ireland), Ettiene Caruana (Malta), Kirsten Enger Dybendal (Norway), Amor González Redondo (Spain), Instituto Nacional de Estatística (Portugal), Mária Katerinková (Slovakia), Stavroula Katsirelou and Konstantinos Voulgaris (Greece), Annika Klintefelt (Sweden), Zofia Kostrzewa (Poland), Anita Lange (Denmark), Corinne Di Loreto (Switzerland), Jolanda van der Lubbe (The Netherlands), Loukia Makri (Cyprus), Stephan Marik-Lebeck (Austria), François Peltier (Luxembourg), Nicolas Perrin (Belgium), Janja Povhe (Slovenia), Helerin Rannala (Estonia), Matti Saari (Finland), Annamária Sárosi (Hungary), Mr. Uldis Usackis (Latvia), Palvi Whitfield (United Kingdom). We would also like to thank all the PROMINSTAT country experts.

Summary

In recent years international migration played increasingly important role in the shaping of the population dynamics in Europe, often becoming a more significant component of population change than the natural change. An increase in the stock of foreigners and considerable problems in their integration made societies and politicians look at migration flows carefully. On the other hand, deficits of labour force on the global, regional and local labour markets, as well as the ageing of population made some entrepreneurs and policy makers look at migration as a cure to these problems. In consequence, the problem of migration became a topic of political and policy discussions, especially the question of immigration.

The developments outlined above have gradually led to an increased awareness, among researchers, planners, entrepreneurs, policy makers and politicians that there is a need for good quantitative migration flow data. For researchers, data are indispensable in a wide range of disciplines, such as demography, geography, sociology or economics, mostly to assess the developments and to make informed statements on their consequences and future developments. For planners and policy makers, they are needed to make operational decisions concerning implementation of infrastructural and social projects and programmes addressing migration-related needs as well as to provide sound population and labour market management. Politicians need data to shape migration policies.

Poorly defined, bad quality or otherwise inadequate migration data have an impact not only on official migration statistics but also on statistics of population stocks and in consequence, indirectly, demographic indicators such as fertility and mortality rates or economic performance indicators as, for example, GDP *per capita*.

In the study, we have presented a detailed analysis of the availability, reliability and comparability of data on international migration flows in 27 European countries (all EU Members States except Bulgaria and Romania, plus Norway and Switzerland). Our conclusion is that internationally comparative research on migration flows in Europe are currently generally not possible. The main problem is the comparability of data, in particular the differences in definitions and sources used in various countries and in the coverage of the statistics. These differences imply that comparing migration flows in various countries would be often like comparing pears and apples.

Researchers undertaking any international comparisons should carefully check the meaning of the available data and investigate different sources. Comparisons may only be attempted if the data from various countries measure the same phenomenon. If the data are not internationally comparable, any conclusions may be drawn only separately for each country, for the categories of migration flows measured in the given country.

Researchers trying to go more deeply than just total flows and interested in various characteristics of migrants encounter not only the comparability problem, but also the problem of the lack of data. Characteristics available in most of the countries are age, sex and country of citizenship of migrants. Information on previous or next residence

is also often collected but is more problematic and may be missing. Information on the country of birth and marital status of migrants is often collected in the databases as well, but the relevant statistics (flows by country of birth or by marital status) are rarely prepared. Other important characteristics are frequently not available.

Most readily available data concerning migration flows are macro-data. The main source of these data are administrative registers, with no or a limited access to the micro-data for the researchers. As a consequence, researchers that want to go beyond the usually published statistics face the necessity of organising dedicated surveys.

Clearly, improvement of international migration statistics requires international cooperation. In Europe, considerable progress is envisaged when the data prepared according to the *EU Regulation on international migration statistics* begin to be published. It should be noted that the last years brought in an evident improvement in migration statistics on international migration flows in some countries. In our opinion, this is a direct consequence of the preparations for the *EU Regulation*. Notably, Bulgaria and Greece started to provide flow data to Eurostat (Greece only for immigration), and Estonia will probably follow as its quality of data significantly improved and it began to publish statistics on international migration flows in 2009. Slovenia has changed its definitions and adopted the one year duration of stay rule in migration statistics. However, the scope for further improvement is still wide, both in the field of the international comparability of data, as well as in data availability.

If we want to facilitate interdisciplinary research, we need complex multidimensional data. In addition to the statistics on flows specified in the EU Regulation, statistics describing socio-economic characteristics of migrants are needed. The most sought-after variables include reason of migration/purpose of stay, level/years of schooling, profession, employment status and salaries in the origin and destination country, source of household's income, migration history. The extension of the data characterising those who migrated to include both direct questions about reasons of their migration and their economic and labour market characteristics would allow to replace quite imprecise proxy variables with actual explanatory variables. No doubt, this would be a tricky data collection. Perhaps a sensible solution is to create a pan-European longitudinal data collection focused on migration.

Statistical offices should investigate the possibility of linking existing administrative data sources to retrieve missing information. Researchers need better access to the anonymised micro-data from the administrative sources. As far as international cooperation is concerned, wider exchange of information between receiving and sending countries may be helpful.

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A. Introduction

In recent years international migration played increasingly important role in the shaping of the population dynamics regimes in Europe, often becoming a more significant component of population change than the natural change. As this trend most likely will persist in future, the result will be that the population dynamics will be more migration[1] than fertility and mortality driven. An increase in the stock of foreigners and considerable problems in making autochthonous and immigrant populations adjusting to each other seamlessly made societies and politicians look at migration flows carefully. On the other hand, deficits of labour force on the global, regional and local labour markets, as well as the observed and forecasted ageing of population made some entrepreneurs and policy makers look at migration as a miraculous cure to these problems. In consequence, the problem of migration became a topic of political and policy discussions, especially the question of immigration, which has been made the key issue to be tackled by the French EU presidency (Carrera and Guild, 2008).

The developments outlined above have gradually led to an increased awareness, among researchers, planners, entrepreneurs, policy makers and politicians that there is a need for good quantitative migration flow data. For researchers, data are indispensable in a wide range of disciplines, such as demography, geography, sociology or economics, mostly to assess the developments and to make informed statements on their consequences and future developments. For planners and policy makers, they are needed to make operational decisions concerning implementation of infrastructural and social projects and programmes addressing migration-related needs as well as to provide sound population and labour market management. An example might be the use of data on refugee flows[2] for the allocation of the European Refugee Fund within the *Solidarity and Management of Migration Flows* program. Politicians need data to shape migration policies.

Special needs are those of the statisticians from the national statistical institutes (NSIs), who are responsible for producing official migration and population statistics. Poorly defined, bad quality or otherwise inadequate migration data have an impact not only on migration statistics but also statistics on population stocks and in consequence, indirectly, demographic indicators such as fertility and mortality rates (for an excellent example see Sakson, 2002) or economic performance indicators, as for example GDP *per capita*.

Putting aside complex academic discussion on what constitutes “good migration flows data” let us point out that these data have to be comparable and as complete as possible. The need for the complete data means that migration flow statistics should be able to describe as many aspects of the migration phenomenon as

[1] Throughout this paper, we will talk about migration and migrants having international migration in mind, unless stated otherwise.

[2] The following statistics are used among others for the allocation of the European Refugee Fund: data on first applications for refugee or subsidiary protection status, on persons granted refugee status, subsidiary protection or temporary protection and on persons granted permission to reside under a refugee resettlement scheme (Eurostat, 2009b).

possible. For each type of migration flow, we would like to know its size, directions, changes in time and the characteristics of migrants, to name just the main aspects.

The much discussed question of comparability can be boiled down to a simple requirement that all countries systematically collect data which refer to the same category of migration events and to the same characteristics of migrants and migration events. In more operational terms that means that all conditions to count an event as a migration should be the same and that statistics should be reported on the same level of aggregation. There are a number of reasons why we need comparable data. First of all, they are needed in order to compare the situation across countries and across time. From the demographic point of view, they are needed to insure that population accounts for individual countries are consistent between each other and to prepare a correct population balance equation on the European (or – more generally- multinational) level.

Taking into account the growing awareness of the importance of migration data, some kind of standardisation of migration definitions was necessary and it is surprising that the political will needed to support it was for a long time very limited. First the UN (Kelly, 1987) and then Eurostat (Poulain, Debuisson and Eggerickx, 1991; Poulain, 1993) started research into the lack of comparability of international migration data. In the ideal world such research should lead to some harmonization and adjustment of migration statistics by national statistical institutes. However, such changes failed to materialise and, with a few exceptions, there were no substantial changes in the national definitions of international migration for some 15 years. Countries kept following their national definitions, most often not compatible with the UN Recommendation on migration statistics (1998).

A substantial success arrived in 2007, when the European Parliament voted the Regulation of the European Parliament and of the Council on Community statistics on migration and international protection[3]. It gives a hope for a major although much delayed improvement in migration statistics.

B. Overview of research on migration flows in Europe

A comprehensive review of research concerning international migration flows is definitely out of reach. Instead, this section aims to provide a general overview of what types of research are undertaken, how the topic is approached by various disciplines and which data are needed. The references to publications will be used as examples only, without any attempt to provide all or even many publications on the topic.

The point of departure of any discussion of migration research is the well known and acknowledged fact that the migration and/or mobility process has changed substantially in the last decades. The changes are, no doubt, linked to the globalization in the World (Nonnenmacher, 2008). In Europe, they were also linked to

[3] Regulation (EC) no 862/2007 of the European Parliament and of the Council of 11 July 2007 on Community statistics on migration and international protection and repealing Council Regulation (EEC) No 311/76 on the compilation of statistics on foreign workers. Official Journal of the European Union, 31.07.2007, L 199/25.

the demise of communism at the turn of 1980s and 1990s and the long lived European Union principle of free movement of labour within the EU.

The changes were immense and have posed commensurate problems for the methodology of migration research. As far as flows of migrants are concerned, the key question is what sort of mobility (understood as a change of place in space) should be considered as a subject of scrutiny of migration researchers. Definitions of international migration adopted by national statistical institutes and international organizations mainly stipulate that we count as migration a relocation of a person who either stayed or declare to stay in a country of a destination certain period of time and s/he is legally there. A concept of "usual residence" adopted in the UN recommendations (UN, 1998) to some extend specifies the actual meaning of "stay". However, such definitions often exclude the irregular migrants, especially those who crossed the boundary illegally (those who moved into irregularity due to taking employment without appropriate permits may still be counted as migrants). Another major issue is how to account for transnational mobility – people who spend several months in one country, move somewhere else for another several months, and move again and again in a succession of moves.

So we have to agree how we define the concept of migration and, in consequence, what we want to measure. Historically the term "migration" has a connotation of lasting, perhaps even life-long move whereas the term "mobility" was mostly reserved for intra urban relocation (Moore and Clarke, 1978). Not anymore. Nowadays "migration" is quite a wide and vague concept, which refers, among others, to the transfer of labour resources (Borjas, 1999; Daveri and Faini, 1999; Fihel, Kaczmarczyk and Okólski, 2006; Friedberg and Hunt, 1995; Stark and Taylor, 1989, 1991), relocation of highly skilled (Carrington and Detragiache, 1999; Chiswik, 2005; Kevok and Hayne, 1982; OECD, 2002), family migration (Mincer, 1978), return migration (Borjas and Bratsberg, 1996; Reagan and Olsen, 2000), pendulum migration (de Haas, 2006), circular migration (Kaczmarczyk, 2002; Constant and Zimmermann, 2004) and petty trade mobility (Iglicka, 1999), or general geographical relocations of varying nature (Appave, 2008). New types of migration, such as incomplete migration (Okólski, 2001) have been identified.

A good example of modern mobility patterns may be a student who goes to a university outside the country of his residence, next year moves to another country for a study year abroad, then takes a year of compulsory (part of the curriculum) employment still somewhere else, returns to the country of studies to complete his degree and moves on to another country to start employment. He certainly emigrated from the country of origin but – from the point of view of the UN definition of long-term migration - it is impossible to establish his country of destination, given that he did not stay anywhere for a full year (however, his migration would fall into the short-term migration category, as defined within the UN Recommendations). In practice his numerous migrations will not be captured by most NSIs.

Another example may be a worker who works several months abroad, return to his country of origin and then goes to another country and yet another. He may stay in the country of origin for a month or two and in various countries of destinations for the rest of the year.

In an extreme case we may ask if tourism and business travel are a part of migration research. Probably not, but Kraal (2008) noted that research on such issues are needed as tourism and business trips pave the way for longer relocations.

The way these issues are tackled depends very much on the discipline within which the research is undertaken. Such diversity of migration-related phenomena does not cause conceptual problems for sociologists, anthropologists and some geographers or social demographers who aim at capturing processes irrespective of their formal status and who rely on qualitative rather than quantitative methods. Mathematically minded demographers or geographers as well as economists need numbers and well defined variables. In their research, they are dependent to a large extent on state statistics, even if they do a lot of estimates. For them, the key questions in the research concerning flows of migrants are very simple: how many events (migration flows) occurred and how many migrants undertook them. The simplicity of these questions does not reveal the true complexity of the subject matter. There is an ample discussion on the issues concerning the measurement of migration flows (Nowok, Kupiszewska and Poulain, 2006). Obviously, they would also like to know some socio-economic-demographic characteristics of those who migrated and be aware of geographical and temporal aspects of migration.

B.1 Migration theories and determinants of migration

Almost all migration theories and probably the majority of models of migration pertain to migration flows. This issue is so dominant that Massey et al. (1993) introduced in their influential paper the differentiation of theories by types of flows they referred to as the principal organizing division of migration theories. They distinguished two categories:

1. Theories explaining flow initiation: neoclassical economics macro theory (Lewis, 1954); neoclassical economics micro theory (Sjaastad, 1962); new economics of migration (Stark, 1991); dual labour market theory (Piore, 1979); World system theory (Wallerstein, 1974).
2. Flow perpetuation theories: network theory (Taylor, 1986), institutional theory; cumulative causation theory (Myrdal, 1957); migration system theory (Fawcett, 1989).

The construction of any theory requires empirical research and hypothesis testing. The fragmentation of theoretical approaches is due to two reasons: first, representatives of each discipline attempt to theorise within their area of competence. However, migration is a multidimentional phenomenon in which economic, sociological, psychological, geographic, demographic and other factors interplay. Another reason is that each discipline uses different data for the empirical work. This differentiation in data requirements concerns the level of data collection (macro vs. micro) and different variables needed. Economists need data on income or economic activity of migrants, about their education and labour market performance. Demographers concentrate on demographic characteristics of migrants such as age or sex. Geographers would also be interested in spatial characteristics of migration on regional or even subregional levels.

So far there was no successful attempt to create a general theory of migration which would be relevant for all categories of migrants and all disciplinary perspectives. Obviously, the main reason is the already mentioned complexity and multidimensionality of the phenomenon of migration. The way data are collected and processed certainly has not got a profound impact on the attempts at unification of theories, but coherent datasets would certainly support the theory testing process.

Testing theories and verification of quantitative models would benefit from the comparability of data between the countries. The EU regulation on migration statistics, provided its implementation is successful, should allow researchers to have access to comparable migration data. Unfortunately, the scope of the regulated data collection is quite limited. Should a certain number of countries expand the scope of harmonisation and go beyond the regulation's requirements, we would reach a direct comparability of much wider data.

Somewhat simplified and simpler research issue, compared to formulation of migration theories, is the question on the purpose for which people migrate. We distinguish labour migration (Fihel, Kaczmarczyk and Okólski, 2006), highly skilled labour migration (Ackers and Gill, 2008), educational (student) migration (Findlay and Stam, 2006), and family migration (Bailey and Boyle, 2004). Other characteristics of migrating population, such as retirement migration, ethnic migration (Drbohlav, Janska. 2004), etc. are also taken into account.

A related question is the identification of the determinants of migration. It arises directly from the body of migration theory, but is often formulated in operational terms, suitable for handling with econometric models. However, constructing econometric migration models is hampered by the lack of data: migration factors identified in a theory are often not measured by statistics. An excellent example of such a problem is an attempt to estimate how income disparity impacts migration. Income disparity is typically measured by the difference in the average salary level in destination and source multiplied by some measure of chances of getting employment in destination (e.g. activity level). These variables are derived from general statistics compiled for the entire population and do not take into account either actual situation of migrants on the labour market or the actual value of their work. So proxy variables are used, which are quite loosely linked to the requirement of migration research.

B.2 Consequences of migration for the receiving and sending countries; migration and development

Substantial body of literature pertains to the issue of migration flows and development, in particular to the issue of migration flows and remittances (see Frejka, Okólski and Sword (1998) for an example of impact of remittances in micro and meso scale and Leon-Ledesma and Piracha (2004) for macroeconomic impact), migration flow and labour market development (Lemos and Portes, 2008), brain drain and impact of migration flows on social cohesion (Łukowski, 1998), regional development (Jończy, 2003) growth of cities (Drbohlav and Sykora, 1997) or sectoral development (Miluka et al., 2007).

A key and basically unresolved question in such research is the way one may quantify the economic and developmental impact of migration: remittances and their use, migrant-generated investment (both by migrants themselves and through migrants' interaction with third party investors), soft capital gained and transferred (knowledge, know-how, human capital, social and business networks etc.). Most of these variables are very difficult to conceptualise in statistical terms (e.g. the transfer of social and business networks), others, even if easy to conceptualise, as for example remittances, are difficult to measure due to respondents' reluctance to divulge sensitive (financial in this case) information.

B.3 Spatial distribution of incoming and outgoing migrants

Published statistics on international migration are usually deprived of information on their spatial (regional) origin or destination. Researchers try to estimate such patterns using all available sources of data.

Often, the regional distribution of international migrants has to be either assumed or modelled. Van der Gaag and van Wissen (1999, 2001) observed that stocks of foreigners and total populations are reasonably good predictors of internal distribution of incoming international migrants (proportionality to the number foreigners in the region holds for the inflows of foreigners). As expected, high unemployment decreases the attractiveness of the region for immigrants. According to another study (van der Gaag and van Wissen, 2002), an alternative option might be to use historical distributions of migration flows, or a combination of these variables. Needless to say, the research of this type requires data on the distribution of immigration of both foreigners and nationals by region, on the regional stocks of total and foreign population, as well as additional regional data that can be used as explanatory variables.

B.4 Demographic, socioeconomic and geographical characteristics of migrants

The identification of multidimensional characteristics of migrants is one of the main subjects of research on migration flows. Such research is either a part of a broader assignment or simply focused on the provision of basic information by combining data from a variety of sources. A good example of the latter may be a paper by Grabowska-Lusińska and Okólski (2008). Combining data from several sources, they attempted at a reconstruction of demographic (age, sex), geographic (region of origin, type of location of origin), socio-economic (education, main source of income of a household, economic activity) characteristics of emigrants from Poland. Given a limited provision of data on migrants' characteristics, such research plays vital role in extracting as much as possible information from varied sources.

Where no adequate sources of data exist, dedicated surveys are organised, as in the case of the MAFE (*Migration between Africa and Europe*) project coordinated by Institut National d'Etudes Démographiques (INED). This on-going project concerns migration flows between Europe and Senegal, the Democratic Republic of Congo and Ghana, which together account for over a quarter of all African migration to the EU (INED, 2009). An important part of the project are surveys conducted in both

origin and destination countries, i.e.: in the three sub-Saharan countries; in France, Italy, and Spain – among migrants from Senegal; in Belgium and the UK among migrants from DR Congo; as well as in the Netherlands – among migrants from Ghana. Various longitudinal data are collected, including past migration, education, work and family histories for individuals. Moreover, a range of contextual data is gathered. The data constitute the basis for the analysis of the patterns of African migration to Europe and their determinants. Return and circular migration take an important part in the analysis. The MAFE surveys build on the experience of an earlier project coordinated by the Netherlands Interdisciplinary Demographic Institute (NIDI) (*Push and Pull Factors of International Migration*), within which surveys were conduced in Turkey, Morocco, Egypt, Senegal and Ghana on one side, and Italy and Spain on the other (Schoorl et al., 2000). An important feature of the surveys is that both migrants and non-migrants were interviewed in order to better identify the determinants of migration.

B.5 Forecasting international migration

The forecasting of migration is closely linked and based on migration modelling. Given the large volume and diversity of literature on migration modelling and often a very theoretical nature of models, we will focus on the migration forecasting, selecting only these models which may have direct application in practice. Forecasting migration flows is done in two contexts: either as a part of forecasting of population or as forecasting of migration flows on its own.

The former forecasts are most often formulated as judgemental scenarios, usually consistent with the assumed general trajectory of the overall development. Sometimes, these scenarios are quite implausible from today's perspective, as for example the assumption of the existence of international migration only in Germany and Ireland in the 1985 EU forecast (NEI, 1986) or lack of any international migration in the 1980 EU forecast (Haverkate and van Haselen, 1990, 1992). More complex approach was proposed by Bijak et al. (2004), who prepared a scenario for migration in the new EU member states embedded in the assumptions on the development of economy and political and policy changes. The scenario was used in the 2005 Eurostat population forecast. For the same population forecast Lanzieri (2004) produced a migration forecast for the old EU member states by averaging three different forecasts. Simultaneously, the population dynamics models have evolved (Rees, 1996; Kupiszewski and Kupiszewska, 1998; Kupiszewski, 2002a) to integrate the international migration according to the systemic approach developed be Rogers (1975) and known as multiregional (and later also multidimensional) demography.

A review of methodological approaches used for modelling international migration in national population forecasts (Keilman and Cruijsen, 1992) shows that the problem of international migration was in many ways dwarfed by the development of the population dynamics models. The research on forecasting of migration flows on their own has resulted in considerably more complex scene.

Bijak (2008) draws the main methodological divide between deterministic and probabilistic forecasts. Based on Bijak's (2008) overview, the following main categories of deterministic migration flow forecasts could be distinguished:

judgemental scenarios (including simple extrapolations), forecasts based on surveys among experts (including Delphi) and forecasts based on migration propensity surveys. As an example of the first one, we can mention the work by Layard et al. (1992), who extrapolated historical migration from Southern to Northern Europe and from Mexico to the USA in 1970s and 1980s to forecast future migration from Central-Eastern to Western Europe. Drbohlav (1996) offers an excellent and one of a few examples of migration forecasting based on a two rounds Delphi survey. Migration propensity surveys are a popular tool to identify the number of people expressing their willingness to emigrate (i.e. Fassmann and Hintermann, 1997; Alvarez-Plata, Brücker and Siliverstovs, 2003). Kupiszewski (2002b) noted that they are not forecasts, despite being used as ones. He also proposed that panel research allowing verification of the fraction of those who actually emigrated after a certain period, among those who declared emigration, could make the migration propensity surveys a useful tool for migration forecasting.

One of the interesting examples of the construction of probabilistic forecasting models in the micro scale was the paper by Massey and Zenteno (1999), in which the authors used ethnosurvey results to predict probability of immigration and return. More popular are macro approaches, such as econometric modelling (Fertig and Schmidt, 2000; Dustmann et al., 2003; Alvarez-Plata et al., 2003) and time series modelling (de Beer, 1997). Substantial improvement in the methodology of forecasting, especially the quantification of their uncertainty was achieved by Bijak (2008), who pioneered the application of the Bayesian methodology to modelling international migration, and Bijak and Wiśniowski (2009). For statistical modelling, especially but not exclusively using time series, the key requirement is to provide as long as possible time series of migration flows. These are often not available, as in the past not all countries collected the data on international migration, some countries do not provide the data on year by year basis and, last but not least, changes in definitions cut the time series.

Another categorisation of the main methods of forecasting international migration was proposed by de Beer (2008). De Beer distinguished two types of methods: time series projections (using deterministic or stochastic trends) and argument-based forecasts. He argues that the former are very sensitive to the selection of the extrapolation method and the latter might be a useful alternative. From the point of view of the current discussion we may note that while information on historical flows are needed for the time series modelling, the argument–based methods require information on additional variables which form the basis of the selected explanatory model.

B.6 Policy-oriented research

Generally, all research can be used for policy making decisions. Therefore, the concept of “policy-oriented research” does not denote any specific, from the point of view of substance or methodology, sub-discipline of migration research. Instead, it refers rather to research which should be done to reply to specific policy questions. Policy-oriented research often relate to labour migration (Hönekopp and Mattila,

2008), irregular migrants (CLANDESTINO EU project[4]; Kupiszewski and Mattila, 2008) or trafficking and smuggling in human beings (i.e. ICMPD, 2008).

Policy makers dealing with migration issues in the European Commission usually focus their interest on immigration of third-country nationals, i.e. the citizens of the non-EEA countries and emigration is usually outside their scope of interest. On the other hand, policies concerning aging and labour market would require information on both immigration and emigration flows as they both impact the projected population and labour force resources. On national level, the main focus of the policy-oriented research is conditioned by the main policy problems. For example in Poland, there has been demand for research on emigration and more recently on return migration.

Data requirements of the policy-oriented research do not differ in terms of scope or definition to the data requirement of any other migration research, perhaps with the notable exception that they should be as recent as possible.

B.7 Research on international migration statistics

Research in this category may concern for example the analysis of the availability, comparability and reliability of data and provide recommendations for the improvement of the situation. For Europe, a lot of work in this field was done by Poulain (e.g. Poulain, 1993, 1999, 2001). A good example of a recent project is THESIM – Towards Harmonised European Statistics on International Migration -. The THESIM book (Poulain et al., 2006) is so far the most recent, comprehensive documentation of international migration data collection systems in 25 EU Member States and contains an overview chapter dedicated to migration flow statistics.

In the PROMINSTAT project (*Promoting Comparative Quantitative Research in the Field of Migration and Integration in Europe*[5]), the availability of data was studied in more detail, investigating not only aggregated statistics but also the microdata (data concerning individuals) and the detailed contents of various datasets. In particular, the sources that are used (or may be used) for the compilation of migration flow statistics were described in the PROMINSTAT database.

In parallel to the investigation of the existing situation, attempts to estimate missing data are undertaken, either within dedicated projects or within wider research. The MIMOSA project (*Modelling of statistical data on migration and migrant populations*)[6] was dedicated, among others, to the estimation of migration flows in Europe by country of previous/next residence (NIDI, 2009) and by citizenship. Selected results of the MIMOSA project are presented in Section D.4.

[4] http://clandestino.eliamep.gr
[5] http://www.prominstat.eu
[6] http://mimosa.gedap.be

C. Definitions, concepts and the key indicators

C.1 Definitions and measures of emigration and immigration flows

A prerequisite for undertaking any comparative research on international migration flows is the adoption of uniform definitions of basic terms that would be used throughout the study. In particular, it must be clear what is meant by international migration flow, immigration, emigration, etc. This is important in any study but in a quantitative study in particular, so that we know exactly what the numbers refer to. Some researchers may argue that the standards have been already set, pointing to the definitions proposed in the UN Recommendations. However, using the UN definitions is not the only option. Other harmonised definitions were proposed for example by the OECD.

In our view, due to the complexity of the phenomenon of international migration, there is no single measure of migration flows that would suit all studies and the researchers have to set their point of reference depending on the study scope and goals. For example, in the study of labour migration one would be probably interested in long-term and short-term flows (understood according to the UN definitions). In the research concerning legal status of immigrants, it would be important to distinguish flows of migrants who hold a permit to settle from those concerning persons with a temporary (short-term or long-term) residence permit. Somewhere in between would be the studies aimed at forecasting migration for the purpose of population projections, in which only long-term migration will be relevant, as short term flows do not need to be taken into account in calculating annual population stocks. Thus, the measures of migration flows can differ in the duration of stay in a foreign country. They may also differ in the coverage. Governments and policy makers are often mainly interested in the flows of foreigners, or - in the case of policy makers from the EU – in the flows of non-EU or non-EEA citizens. Social researchers need to know the numbers concerning total flows, with both foreigners and nationals included. Moreover, while policy makers are often more concerned with immigration, social scientists are interested in emigration as well.

This variety of needs may explain, but not justify, a variety of definitions that may be found in various sources - some examples are given in Box 1. In official national statistics, data on international migration flows are usually under the responsibility of a department dealing with demographic data, thus in the majority of cases statistics concern total flows and the main differences in definitions concern duration of stay. However, sometimes official migration statistics are focused on the flows of foreigners. These issues are discussed in more details in Section 5, where the practices adopted in individual European countries are analysed. As mentioned by Singleton, “within the European Commission, the term migration is defined and used in different ways: DG JLS[7] generally refers only to non-EU migrants, reflecting its policy priorities to develop common EU immigration and asylum policies. Other DGs (DG Research, DG Employment and Eurostat, for example) use the term migrant in a broader sense, to refer to migration of all citizenships, including the nationals of a member State.” (Singleton, 2008: 30).

[7] Directorate-General Justice Freedom Security (Direction Générale Justice, Liberté et Sécurité) – the department of the European Commission responsible for making proposals for European Union legislation.

Box 1. Various definitions of migration flow or a migrant (when reporting migrant flows)

Migration terminology in "World migration 2008", IOM (IOM 2008:493,494)

Immigration: A process by which **non-nationals** move into a country for the purpose of settlement.
Emigration: The act of departing or exiting from one state with a view to settling in another.

Federation for American Immigration Reform (FAIR)
http//:www.fairus.org/site/PageNavigator/facts/glossary/

Emigration: The process of leaving one country to take up permanent or semi-permanent residence in another country.
Immigration: The process of entering one country from another to take up permanent or semi-permanent residence.

UN Recommendations on Statistics of International Migration (UN 1998: 17,18)

"an ***international migrant*** is defined as **any person who changes his or her country of usual residence**"

Long-term migrant
A person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence.

Short-term migrant
A person who moves to a country other than that of his or her usual residence for a period of at least 3 months but less than a year (12 months) except in cases where the movement to that country is for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage.

Population statistics, Eurostat (Eurostat 2006:172)

Immigrants: Either non-nationals arriving from abroad or nationals returning from abroad with the intention of residing in the country for a certain period. This period varies from 3 months for a Danish person returning to Denmark to 12 months for any person entering the United Kingdom.

IOM Glossary on Migration (IOM 2004:41)

Migration: A process of moving, either across an international border, or within a State.It is a population movement, encompassing any kind of movement of people, **whatever its length, composition and causes**; it includes migration of refugees, displaced persons,uprooted people, and economic migrants.

In the authors view, while the use of various measures would be perfectly correct, the basic terms should be uniquely defined and should be used in a rigorous way. In particular, we are against the use of the terms migrant or immigration flows to refer to foreigners or foreign-born only. The demographic approach, described in the next section may be a universal basis to build on. Based on it, indicators referring to various aspects of migration flows should be defined.

The need for the harmonisation of the definitions relating to international migration has been recognised long time ago and a number of initiatives have been undertaken in order to facilitate international comparability of data from various countries. Further, the results of three initiatives are briefly described from the point of view of statistics on international migration flows: the UN recommendations, harmonised statistics proposed by the OECD and the EU regulation. However, it is worth to have a more general look at the main indicators used for measuring international migration flows.

C.2 Key migration flows indicators

Immigration and emigration (absolute flow numbers)

From the demographic point of view, there are two main measures that describe the overall volume of migration flows to and from a given territory: immigration and emigration. They have an impact on the size of the population of a country, according to the population balance equation:

$$P(t+1) = P(t) + \text{Births} - \text{Deaths} + \text{Immigration} - \text{Emigration},$$

where P(t) is population at time t and P(t+1) is population one year later. In the case of regions, additional components of population change are internal migration flows:

$$P(t+1) = P(t) + \text{Births} - \text{Deaths} + \text{In-migration} - \text{Out-migration} + \text{Immigration} - \text{Emigration}.$$

Population balance equation may be written for the total population of a country or a region, or separately for each sex and age group. In the latter case, immigration and emigration data by sex and age group (5-year or preferably single years) are needed. It may be also written for various sub-groups of population, in particular for nationals and foreigners separately (in this case, acquisitions of citizenship have to be taken into account as well).

The population balance equation clearly shows the difference between the concept of stock and flows. While the stock figures P(t) give the number of people resident in some place at a specific point in time, flow numbers represent the number of persons who changed their place of residence during a certain period, usually a year. The issue of the definition of the place of residence is discussed in detailed in Poulain (2009).

Please note that while the use of the term “migrant flow” is not controversial from the demographers point of view, the term “migrant stock” is rather ambiguous and should be avoided. However, to be precise, the term “migrant flow” should be used only to denote the overall flow, including the flow of nationals, not just the flow of foreigners or foreign born. Looking from the point of view of a given country, a possible interpretation of “migrant stock” could be the number of persons who moved to live in this country after being born in another country[8], but it is usually used with other meanings in mind, which vary. While we may normally guess that it means the number of persons with some sort of foreign background, it is not always clear if it refers to foreigners or to foreign-born, to both groups, or may be also to some other category of people as well.

The fact that migration flows and population stocks are interlinked through the population balance equation is important for setting the definitions: the measures of population stock should be consistent with the measures of migration flows.

Net migration

Net international migration is defined as a difference between immigration and emigration. In the absence of data on immigration and/or emigration, it may be estimated as a difference between total population change and the natural increase:

$$\text{Net migration} = P(t+1) - P(t) - \text{Natural increase},$$

where natural increase is the difference between live births and deaths. The resulting estimate is composed of the actual net migration and the error of population and natural change measurement. Therefore the accuracy of such estimation depends on the quality of the data on population stocks and registration of deaths and births. If the annual estimates of population are based on the components method, the net migration figures obtain using both methods will be the same, otherwise they may differ. If net migration is calculated from the population balance, they may be modified by administrative corrections. Such administrative corrections may include for example persons who were removed from the register in the given year but in fact emigrated in previous years. In this case, the resulting estimate of net migration is not an accurate measure of net migration in the year considered.

Migration rates

Migration rates measure the volume of flows in relation to the population of a country. In particular, emigration rates are defined as a ratio of emigration flow from country X to the stock of population resident in X (usually published as flows per 1000 people). Thus, it is a properly defined demographic rate, i.e. an occurrence/exposure ratio, which should have the population at risk of experiencing the demographic event in the denominator (Hinde, 1998; Rowland, 2006). Emigration rates are useful

[8] In Canada, migrant stock category appears in mobility studies and covers people who migrated during a specific period of time (one year or five years) (Statistics Canada, 2009). Another interpretation of “migrant stock” could be the number of people who have ever changed their country of residence (see UN 2006, paragraph 2.91).

measures to compare the propensity to migrate for the countries with differing population size. They are also used in population projections to calculate the predicted size of emigration flows. When calculating emigration rates it is important to insure that the numerator and the denominator correspond to each other (see *principle of correspondence* in Hinde (2008:4)).

In the case of immigration, there is no equivalent indicator, with immigration divided by population at risk. Such an indicator would be difficult to construct as it would need to have population of the whole world (excluding the country in question) in the denominator. However, indicators called “immigration rates” are published in the scientific literature and reference sources. They are defined in relation to the population of the destination country (usually as immigration per thousand people in the destination country) and are a useful measure for comparing the size of inflow to countries population of which vary in size. An analogous measure is also often calculated for net migration (net migration per thousand population). Net migration rates are used for example to compare the relative importance of natural increase and net migration for the population change in different countries. As noted by Edmonston and Michalowski (2004), the denominator of the migration rates represents the population at risk of sending out emigrants or receiving immigrants.

Proxy variables

In the absence of the data on the number of migration events or the number of migrants undertaking migration, some proxy variables are sometimes used. In the case of immigration flows, the relevant proxy variables are the number of residence permits issued during the year or the number of applications for residence permits. Obviously, permit renewals should not be counted in this case. The extraction of the number of first permits turns out to be an important technical problem. Moreover, the term “first permit” is not uniquely defined. Eurostat has prepared the guidelines for the collection of data on first resident permits, to be conducted within the EU regulation.

For emigration, the number of expired permits is sometimes counted, usually to supplement the (incomplete) data on de-registrations.

An important disadvantage of the use of data concerning permits as a proxy for flows is that it only provides information on migrants who need a residence permit (in particular third-country nationals). The advantage is that some additional information about migration might be available, such as the reason for issuing the permit (e.g. work or study).

C.3 Migration flows typologies

Various typologies of migration flows may be proposed.

- Based on the duration of stay: short-term and long-term migration (see the next section);
- Based on the legal status: legal and illegal flows;
- Based on citizenship and the direction of flow: immigrating foreigners, emigrating foreigners, immigrating nationals, emigrating nationals.

Additional classification of international migration flows proposed in the UN recommendations is based on the reason for migration, with the following eight categories:

- Study
- Traineeship
- Work
- Work in international organisation
- Free establishment
- Settlement
- Family formation or unification
- Refugees

The full taxonomy of migration flows in the UN recommendations combines three criteria: citizenship, reason of stay and flow direction (inflow/outflow). The classification of immigrants is based on the reason of stay in the new country of destination in the case of foreigners and in the country of departure in the case of nationals. Conversely, the classification of emigrants is based on the reason of stay in the country of departure in the case of foreigners but in the country of destination in the case of nationals. Thus, for example in the first category, the following groups of migrants were listed: arriving foreigners admitted as workers; citizens returning from working abroad, departing foreign migrant workers and citizens departing to work abroad. It would be useful to have a similar taxonomy, based on the reason for stay in the destination country for all migrants (nationals and foreigners together). Moreover, two categories, not relevant for the compilation of international migration statistics according to the UN recommendations, should be added to the above list, if their stay exceeds one year: asylum seekers and illegal migrants.

In the UN recommendations, dependants are expected to be counted within the same category as the migrant with whom he/she moved. In our opinion, this approach is misleading in some cases, for example the same size of the labour migrant group might be due to a large number of workers coming alone or a smaller number of workers coming with many family members.

D. Harmonisation of statistics on flows

D.1 UN recommendations

The current *UN Recommendations on Statistics of International Migration*, published in 1998, do not give any explicit definition of international migration flow or international migration event. Instead, Chapter II of the Recommendations contains a *definition of "international migrant" for the purpose of measuring flows*: "an international migrant is defined as any person who changes his or her place of usual residence" (UN, 1998:17). *Country of usual residence* is defined as "the country in which a person lives, that is to say, the country in which he or she has a place to live where he or she normally spends the daily period of rest. Temporary travel abroad for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage does not change a person's country of usual residence" (UN, 1998:18). In addition, definitions of short-term and long-term migrant are proposed, as quoted in Box 1.

Explicit definitions of migration flows appear in the UN *Technical report on the use of censuses and survey for statistics on international migration*, published in 2007 and meant as a first part of a practical guide on the implementation of the *UN Recommendations*. The definitions are as follows: “International immigration flow is the number of international immigrations in a given country over the course of a specified period, usually a calendar year. International emigration flow is the number of international emigrations from a given country over the course of a specified period, usually a calendar year.” (UN, 2007:16).

Data on international migration flows is not just the data on the total number of migration events. As stated in the *UN Technical report,* “flow data are related to events that happen on a continuous basis and are counted during a given period of time, usually one calendar year. These data also include the characteristics of the persons who undertake these events” (UN, 2007:16). The UN Recommendations list 40 tabulations of inflows and 38 tabulations of outflows by various features: sex; age group or single year of birth; country of citizenship; country of birth; country of previous or future residence; marital status; educational attainment; purpose and duration of stay abroad; occupation, status of employment and industry of employer in previous country of residence; type and duration of validity of permit; occupation, status of employment and industry of employer in the receiving country.

The Questionnaire on Travel and Migration (UN, 2005), used by the United Nations Statistical Division to collect data of flows from the countries, contains eleven tables, so a more restricted number, but even these ones prove to be too demanding and many cells of the tables are left empty.

D.2 EU regulation on international migration

In 2007, the European Parliament and the EU Council adopted the *Regulation No 862/2007 on Community statistics on migration and international protection*. In the EU regulation, the UN definitions of a long-term migrant and of the usual place of residence became the basis for the definition of immigration and emigration. The following definitions were adopted (Article 2.1b and 2.1c):

‘immigration’ means the action by which a person establishes his or her usual residence in the territory of a Member State for a period that is, or is expected to be, of at least 12 months, having previously been usually resident in another Member State or a third country;

‘emigration’ means the action by which a person, having previously been usually resident in the territory of a Member State, ceases to have his or her usual residence in that Member State for a period that is, or is expected to be, of at least 12 months.

Immigrant and emigrant are defined respectively as a person undertaking immigration and emigration.

According to the legally binding version of the EU regulation on migration statistics, Member States will have to provide to Eurostat a very limited set of statistics

concerning international migration flows, namely statistics on the number of immigrants disaggregated by:

- groups of citizenship by age and sex;
- groups of country of birth by age and sex;
- groups of previous usual residence by age and sex;

as well the statistics on the number of emigrants disaggregated by:

- groups of citizenship;
- age;
- sex;
- groups of countries of usual residence.

This set of statistics is the result of the lengthy negotiations between the Commission and the Member States. The latter feared that they would not been able to fulfil the obligations and requested the reduction of the list of the compulsory statistics as compared to the initially proposed list.

Unfortunately, neither statistics on short-term international migration flows nor disaggregation by any socio-economic variable is requested in the EU regulation. There is however an article requesting the statistics on the number of first residence permits issued during the reference period, by the reason for the permit being issued and by length of validity.

D.3 Harmonised statistics proposed by OECD

As noted by Lemaitre (2005:1), "despite rather pragmatic approach adopted for the 1998 revision [of the UN recommendations] progress in improving the comparability of statistics of migration flows […] remains limited." One of the reasons is that statistics are very often produced based on administrative sources designed for other than statistical purposed, with the rules varying between the countries, and changing these rules is not straightforward.

As in practice it was not possible to harmonise the statistics using the UN Recommendation's criterion of one year duration of stay, Lemaitre proposed to use the criterion of the reason for movement (Lemaitre, 2005). This idea was partially implemented in 2006, when OECD produced for the first time their harmonised statistics on long-term immigration flows (OECD, 2006). They were published in OECD's *International Migration Outlook 2006* report – a re-branded continuation of the SOPEMI reports series (previously entitled *Trends in international migration*), and then in the 2007 and 2008 reports (OECD, 2007, 2008).

The OECD harmonised statistics (renamed as "standardised statistics" since the 2007 report), concern the permanent-type immigration of foreigners. As explained in the SOPEMI 2008 report, "*Permanent-type* entries are entries into the resident population of persons with a residence permit that is either permanent or more or less indefinitely renewable. They thus exclude seasonal workers, international students, trainees, exchange visitors, etc. even if in some cases their duration of stay may be longer than one year. […] The statistics also include so-called *changes in status*, that is, situations in which a foreign national has entered the country on a

temporary basis of some kind, for example as a tourist or a student, but applies for and is allowed to remain on a permanent basis." (OECD, 2008:30).

In Table 1, the OECD standardised statistics published so far, compared with the usually published statistics of immigration flows, are presented. The table shows clearly that the standardised values may be very different from the usually published numbers: for some countries the difference exceeds 50% of the usually published numbers. Standardised values are in the majority of cases smaller, as they include permanent-type flows only, while usually published numbers may include persons with long-term but non-renewable permits as well as those arriving for a short-term stay.

Table 1. OECD standardised statistics and usually published statistics on inflow of foreigners (in thousands)

	2004			2005			2006		
	Usually published	Standardised	Standardised in % of usually published	Usually published	Standardised	Standardised in % of usually published	Usually published	Standardised	Standardised in % of usually published
Austria	108.9	59.6	55	101.5	56.8	56	85.4	46.4	54
Belgium	na	na	-	77.4	35.9	46	83.4	36.1	43
Germany	602.2	202.3	34	579.3	198.6	34	558.5	216.0	39
Denmark	18.8	15.9	85	na	18.0	-	na	21.7	-
Finland	11.5	5.6	49	12.7	12.7	100	13.9	13.9	100
France	140.1	175.2	125	134.8	168.6	125	135.1	169.0	125
Ireland	na	na	-	na	na	-	88.9	88.9	100
Italy	319.3	156.4	49	na	184.3	-	181.5	204.3	113
Netherlands	65.1	57.0	88	63.4	60.7	96	67.7	59.4	88
Portugal	14.1	13.1	93	28.1	13.3	47	42.2	25.1	59
Sweden	47.6	40.7	86	51.3	53.8	105	80.4	74.0	92
UK	494.1	266.5	54	473.8	362.4	76	451.7	343.2	76
Switzerland	96.3	82.6	86	94.4	78.8	83	102.7	86.3	84
Norway	27.9	21.4	77	31.4	25.8	82	37.4	28.0	75
Australia	150.7	167.3	111	167.3	179.8	107	179.8	191.9	107
Canada	235.8	235.8	100	262.2	262.2	100	251.6	251.6	100
Japan	372.0	88.3	24	372.3	81.3	22	325.6	86.7	27
New Zealand	36.2	41.6	115	54.1	59.4	110	49.8	54.8	110
United States	946.1	946.1	100	1122.4	1122.4	100	1266.3	1266.3	100

Source: Fron et al (2008), Lemaitre et al (2006, 2007) and authors' own calculations.

In the 2006-2008 SOPEMI reports, the country-specific sections and the statistical annexes still contained statistics according to national definition. Moreover, in the most recent report, the OECD made it very clear that the permit-based statistics are meant to complement not to replace the statistics produced according to the UN definition (OECD, 2008).

The main drawback of the OECD approach is that it allows for the harmonisation of statistics on regulated inflows only. It does provide a solution neither for measuring

immigration of nationals and foreigners migrating within free flow regime, nor for measuring emigration flows. Another problem is that changes of status that are included in the statistics are often counted in a different year than the movement actually took place. Moreover, the OECD harmonised statistics were unfortunately not provided in disaggregation by sex, age, citizenship or country of previous residence.

D.4 Harmonised statistics proposed within Eurostat's MIMOSA project

As mentioned in Section 2.7, estimation of migration flows by origin and destination was one of the aims of the MIMOSA project. Building on the methodology proposed earlier by Poulain (1999), Raymer and van der Erf estimated migration flows between 31 European countries, harmonised for the first time based on the UN definition of long-term migrant (NIDI, 2009). When making the estimations, both emigration data reported by the sending countries and immigration data reported by the receiving countries were taken into account. This is an important difference between the OECD and the MIMOSA approaches – in the former, the standardised values for a given country are based on the data from this country only.

The preliminary results of MIMOSA estimations are presented in Table 2, overleaf.

For many countries the MIMOSA estimates are significantly different than the national data and the differences are often much larger than in the case of OECDs standardised values. As expected, the differences are particularly large for the countries where the national definition is very different from the one recommended by the UN. For the countries reporting inflows for permanent residence only, the MIMOSA estimate may be even more than ten times larger than the number reported by the national official statistics.

It is worth noting that the results of the estimates are quite sensitive to the estimation method, although the estimation error has not been quantified yet[9]. Currently, the MIMOSA estimates are the only harmonised data on migration flows (for nationals and foreigners jointly) that exist for Europe. Still, the numbers must be taken with caution.

[9] The calculation of the accuracy the MIMOSA methodology will be extended using a Bayesian approach, in which expert opinion can be incorporated into the modelling framework.of the estimates is envisaged in the IMEM (*Integrated Modelling of European Migration*) project coordinated by the Southampton Statistical Sciences Research Institute. In this new project, the MIMOSA methodology will be extended using a Bayesian approach, in which expert opinion can be incorporated into the modelling framework.

Table 2. Total inflow according to national statistics and MIMOSA estimates (in thousands)

	2004			2005			2006		
	National data	MIMOSA estimate	MIMOSA estimate in % of national data	National data	MIMOSA estimate	MIMOSA estimate in % of national data	National data	MIMOSA estimate	MIMOSA estimate in % of national data
Austria	122.5	123.9	101	114.5	125.4	110	98.5	107.2	109
Belgium	85.4	83.1	97	90.4	90.7	100	96.3	105.8	110
Bulgaria	0.0	31.6			31.3			33.3	
Cyprus	22.0	18.1	82	24.4	20.0	82	15.5	12.8	82
Czech Republic	53.5	103.6	194	60.3	116.9	194	60.2	132.2	220
Germany	780.2	595.9	76	707.4	560.9	79	661.9	525.9	79
Denmark	49.9	35.6	71	52.5	37.4	71	56.8	40.5	71
Estonia	1.1	4.9	444	1.4	4.5	316	2.2	5.0	222
Spain	684.6	424.4	62	719.3	445.8	62	840.8	520.8	62
Finland	20.3	24.0	118	21.4	25.4	119	22.5	26.6	118
France		278.7			300.4			357.0	
Greece		63.1			64.9			66.9	
Hungary	24.3	41.6	171	27.8	43.0	155	21.5	45.9	213
Ireland	84.6	46.5	55	107.8	53.4	50	109.5	71.3	65
Italy	414.9	618.8	149	305.0	455.9	149		513.4	
Lithuania	5.6	11.7	212	6.8	14.6	215	7.7	16.7	215
Luxembourg	12.9	17.6	137	14.4	18.4	128	14.4	15.9	111
Latvia	1.7	4.6	279	1.9	5.3	280	2.8	7.8	279
Malta		2.3			2.7		1.8	2.8	150
Netherlands	94.0	98.8	105	92.3	96.9	105	101.2	106.2	105
Poland	9.5	155.7	1639	9.4	153.5	1639	10.8	177.0	1638
Portugal	16.8	49.3	294		52.3		27.7	60.3	218
Romania	3.0	71.6	2396	3.7	76.5	2064	7.7	86.7	1124
Sweden	62.0	61.7	99	65.2	64.9	100	95.8	95.5	100
Slovenia	10.2	7.2	71	15.0	7.5	50	20.0	7.0	35
Slovakia	10.4	30.9	298	9.4	65.2	693	12.6	87.3	692
United Kingdom	589.0	568.9	97	567.0	545.0	96	596.0	580.2	97
Switzerland	120.2	120.2	100	118.3	118.3	100	127.6	127.6	100
Iceland	5.4	4.0	75	7.8	4.7	61	9.8	5.5	56
Liechtenstein		0.3			0.3			0.5	
Norway	36.5	29.5	81	40.1	32.3	80	45.8	36.9	81

Source: National data – Eurostat; Mimosa estimates – de Beer *et al*. (2009) and authors' own calculations.

E. Comparative analysis of the availability and reliability of data

The aim of this section and the next one is to provide a comparative overview of the availability and reliability of data on international migration flows currently available in the 27 European countries covered by the project. The following is based on the information presented in the detailed country reports and in the PROMINSTAT database. Nevertheless, we have tried to confirm the information shown in the different tables presented later with the PROMINSTAT country experts and national statistical institutes.[10]

[10] Information on the majority of the countries has been confirmed by the relevant PROMINSTAT country expert and national statistics institute. However, the information from **Austria**, **Estonia**, **Spain**,

E.1 Availability of data on international migration flows

E.1.a Sources of data

All the analyzed countries provide data on international migration flows with varying reliability, except **Greece**[11] and **Malta**[12]. Temporary problems occurred in 2009 in the **Czech Republic**.

The sources used by countries to estimate annual international migration volumes can be grouped into two categories: administrative sources and statistical sources, with the first being the most common. Administrative sources include population registers (central or local), registers of foreigners and residence permits registers, whereas statistical sources are sample surveys or datasets maintained by national statistical institutes.

The different sources used to produce official statistics on international migration flows across the 27 countries covered by the project are presented in Table 3 [13]. Central population registers are the most widely used statistical source on migration flows among the studied countries. Almost half of them (12 of the 27) use this register as the only source to measure flows, while **Czech Republic**[14], **Hungary** and **Slovenia**[15] combine this information with the register of foreigners.

Local population registers are used by **Germany**, **Italy** and **the Netherlands**. **Portugal**, **Greece** and **France** produce exclusively statistics on foreigners. Portugal uses data from the register of foreigners, **Greece** from the residence permit register and **France** from both. Few countries provide information based on statistical sources. **Cyprus**, **Ireland** and the **United Kingdom** use sample surveys. **Slovakia** produces statistics using data from statistical forms, combining this source with data from the register of foreigners.

Luxembourg, **Latvia**, **the Netherlands** and **Slovenia** has only been checked by the national statistics institute and the information from **Germany**, **France** and **Italy** by the country expert. Unfortunately, we have not received any validation of the information from **Lithuania** and **Malta**.

[11] In **Greece**, the only information is the number of permits issued to foreigners, excluding ethnic Greeks and it is considered to be a not reliable estimate of total flows (Baldwin-Edwards, 2010). Even these data are not easily accessible for researchers.

[12] None of the existing databases in **Malta** produce reliable information on migration flows. Some data on 2006 and 2007 flows have been sent to Eurostat but the source and the meaning of the data is not clear.

[13] The table concerns sources of migration flow data published within official demographic statistics.

[14] For the **Czech Republic**, the situation as of 2008 has been described here. In 2009, temporary problems with the transfer of data from the Ministry of Interior to the Czech Statistical Office occurred. However, as of June 2009, it was expected that the transfer will resume in the previous format as soon as a new pending legislation would have been adopted.

[15] In **Slovenia**, the central population register and the register of foreigners were integrated in 2007 and in the future, all data on migration will be obtained from the new central population register.

Table 3.-Data sources of official statistics on international migrations flows

Country		Name	
Code	**Name**	English	*Original Language*
AT	Austria	Population Register	*Zentrales Melderegister – ZMR*
BE	Belgium	National Register of Physical Persons	*Registre National des personnes physiques*
CY	Cyprus	Passenger Surveys for Arrivals and Departures	*Έρευνα Ταξιδιωτών και Τουρισμού*
CZ	Czech R.	Information System of Registration of Inhabitants Alien Information System	*Informační Systém Evidence Obyvatel –ISEO* *Cizinecký Informační Systém –CIS*
DE	Germany	Local Population Registers	*Kommunale Melderegister*
DK	Denmark	Statistical Population Register	*Danmarks Statistiks Befolkningsstatistikregister*
EE	Estonia	Population Register**	*Rahvastikuregister*
EL	Greece*	Residence Permits Register from the Interior Ministry	*Adies paramonis*
ES	Spain	Residential Variations Statistics	*Estadística de Variaciones Residenciales*
FI	Finland	National Population Information System	*Väestötietojärjestelmä*
FR	France*	– Inflow estimation from the Residence Permits Register – the National Agency for the Reception of Foreigners and Migration – the French Office for the Protection of Refugees and Stateless Persons	– *Application de Gestion des Dossiers des Ressortissants Étrangers en France* –AGDREF – *Statistiques de l'Agence Nationale de l'Accueil des Etrangers et des Migrations* –ANAEM – *Office français de protection des réfugiés et apatrides* -OFPRA
HU	Hungary	Central Population Register Central Migration Register	*Közigazgatási és Elektronikus Közszolgáltatások Hivatalából –KEKKH- személy-, és lakcímnyilvántartás* *Bevándorlási és Állampolgársági Hivatal Tartózkodási és Letelepedési Engedély Rendszer*
IE	Ireland	Quarterly National Household Survey –QNHS	
IT	Italy	Municipal Population Registers	*Anagrafi comunal*
LT	Lithuania	Residents' Register Service	*Gyventojų registro tarnyba*
LU	Luxembourg	The General List of Natural Persons	*Répertoire des personnes physiques*
LV	Latvia	Residents' Register	*Iedzīvotāju reģistrs*
MT	Malta		
NL	Netherlands	Municipal Population Register	*Gemeentelijke basisadministratie*
PL	Poland	Electronic System of Population Registration	*Powszechny Elektroniczny System Ewidencji Ludności-PESEL*
PT	Portugal*	Aliens and Borders Service database Statistics Portugal/Aliens and Borders Service database	*Serviço de estrangeiros e fronteiras (SEF)* *Instituto Nacional de Estadística/SEF database*
SE	Sweden	Total Population Register	*Befolkningsregistret*
SI	Slovenia	Central Population Register Register of Foreigners	*Centralni register prebivalstva - CRP* *Register tujcev –RT-*
SK	Slovakia	Statistical reports "Report on the change of the address of permanent residence/Report on migration" Register of Aliens	*Hlásenie o sťahovaní, Obyv 5-12* *Evidencia cudzincov*
UK	U. Kingdom	International Passenger Survey (and supplementary sources – see the text)	
NO	Norway	Central Population Register	*Det sentrale folkeregister*
CH	Switzerland	Central Information System on Migration and Information System ORDIPRO Estimates calculated for the Annual Population Statistics	*Zentrale Migrationsinformationssystem (ZEMIS) and Informationssystem ORDIPRO* *Statistik des jährlichen Bevölkerungsstandes (ESPOP)*

Table 3 (continued).-Data sources of official statistics on international migrations flows

Country		Type of source	Type of data available				Linkages to other sources
			Aggregate data		Micro-data		
Code	Name		Nationals	Foreigners	Nationals	Foreigners	
AT	Austria	Central Population Register	yes	yes	no	no	yes
BE	Belgium	Central Population Register	yes	yes	yes[la]	yes[la]	yes
CY	Cyprus	Sample Survey	yes	yes	yes[la]	yes[la]	no
CZ	Czech R.	Central Population Register Register of Foreigners	yes	yes	no	no	yes[l]
DE	Germany	Local Population Registers	yes	yes	yes	yes	yes[l]
DK	Denmark	Central Population Register	yes	yes	yes	yes	yes
EE	Estonia**	Central Population Register	yes	yes	yes[la]	yes[la]	yes[l]
EL	Greece	Residence Permits Register	no	yes[la]	no	yes[la]	no
ES	Spain	Central Population Register	yes	yes	yes	yes	yes[l]
FI	Finland	Central Population Register	yes	yes	yes[la]	yes[la]	yes
FR	France	Residence Permits Register Register of Foreigners	no	yes	no	no	no
HU	Hungary	Central Population Register Register of Foreigners	yes	yes	yes[la]	yes[la]	yes
IE	Ireland	Sample Survey	yes	yes	no	no	no
IT	Italy	Local Population Registers	yes	yes	yes[la]	yes[la]	no
LT	Lithuania	Central Population Register	yes	yes	no	no	yes[l]
LU	Luxembourg	Central Population Register	yes	yes	no	no	yes[l]
LV	Latvia	Central Population Register	yes	yes	no	no	yes[l]
MT	Malta						
NL	Netherlands	Local Population Registers	yes	yes	no	no	yes[l]
PL	Poland	Central Population Register	yes	yes	no	no	yes[l]
PT	Portugal	Register of Foreigners	no	yes	no	yes[la]	no
SE	Sweden	Central Population Register	yes	yes	yes[la]	yes[la]	yes
SI	Slovenia	Central Population Register Register of Foreigners	yes	yes	yes[la]	yes[la]	yes
SK	Slovakia	Statistical Forms Register of Foreigners	yes	yes	yes no	yes no	no
UK	U. Kingdom	Sample Survey	yes	yes	yes[la]	yes[la]	no
NO	Norway	Central Population Register	yes	yes	yes	yes	yes
CH	Switzerland	Register of Foreigners Annual population estimates	Yes	yes	no	yes	no

Notes: yes[la]: Limited access or necessary authorisation; yes[l]: Yes but with limits; *: Only information referring to foreign immigrants
**: For 2000-2007 migration data, population register data were supplemented by the data from the register of residence and work permits of the Citizenship and Migration Board (Statistics Estonia, 2009).

Source: PROMINSTAT project Country Reports and National Statistics Institutes.

An annual comprehensive survey for each municipality is carried out in **Switzerland** to produce data on national migrants, whereas they use their register of foreigners to provide information on non-nationals.

As already mentioned, the difficulties surrounding international comparisons of migration are due to a large extent to the lack of homogeneity of the definitions used in various countries. However, this problem can be reduced by allowing researchers the possibility of approximating to one common definition of the concept of migration through the use of micro-data or by combining different statistical sources. With both methods it is possible to improve the comparability of the estimations by reducing the differences in the criteria used in the definitions or by resolving coverage errors.

Unfortunately, anonymised micro-data are only freely accessible in **Germany**, **Denmark**, **Spain**, **Slovakia**[16], **Norway** and **Switzerland** (only for foreigners). With authorisation or with limited access it may be also possible to obtain micro-data in **Belgium**, **Cyprus**, **Estonia**, **Greece**, **Finland**, **Hungary**, **Italy**, **Portugal**, **Sweden**, **Slovenia** and the **United Kingdom**, but not in the other countries (see Table 3).

With regard to the possibilities for combining data from various sources, once again there are very few countries where this is clearly possible, concretely **Austria**, **Belgium**, **Denmark**, **Finland**, **Hungary**, **Slovenia**, **Sweden** and **Norway**. Among them we can highlight Statistics **Norway**, which, using a system of integrating and linking data, can give accurate and detailed statistics on how immigrants perform on different social areas. Other countries can combine information as there is a PIN that links to individual records. However, this is a little used practice, it is only used with some sources or it is reserved for very limited uses[17]. The remaining countries (**Cyprus**, **Greece**, **France**, **Ireland**, **Italy**, **Portugal**, **Slovakia**, **the United Kingdom** and **Switzerland**) cannot combine information.

In addition to the statistical official sources shown in Table 3, the countries possess additional sources which can provide information related to the migratory flows. Most of the countries have traditional, exhaustive population censuses and also carry out the Labour Force Survey (LFS). Generally, the population censuses are decennial and the most recent one was carried out between 2000 and 2002, depending on the country. The only exceptions are Ireland and Malta which both had their last census more recently. **Ireland** has a quinquennial census and last conducted it in 2006. **Malta** conducted its last decennial census in 2005, but will implement its next census already in 2011 and from then onwards will follow the established international practice of conducting the census in the beginning of each decade.

In **Denmark**, **Finland** and **Norway**, the censuses conducted in the 2001 census round were register-based, so they cannot provide more information than the registers themselves. In the **Netherlands**, the 2001 census was based on a combination of existing data from registers and sample surveys[18]. There are two

[16] Only from the Statistical Report on Change of the Address of Permanent Residence/Report on Migration (Statistical Forms).
[17] The countries which are in this situation can be founded in Table 3.
[18] http://www.cbs.nl/en-GB/menu/themas/dossiers/volkstellingen/publicaties/artikelen/archief/2005/2005-virtual-dutch-census-art.htm

countries -, **Germany** and **Sweden** - that since 1987 and 1990, respectively, have not renewed their censuses. However, both countries plan to take part in the EU-wide census round in 2011[19].

Thanks to the censuses, a lot of immigrants' features can be identified but, as is well-known, the censuses measure flows retrospectively. Most often, they compare the current place of residence with that of a previous census date and, therefore, capture an immigrant in the cases where the current place of residence does not coincide with that of the earlier date[20]. Registers are constantly updated and capture all changes of residence (according to the country rules). Therefore, the measurement of migration is performed in different ways and there are reasons to expect that flows found through the registers will be higher than those found through the censuses. Firstly, registers measure events (*migrations)* and an individual *migrant* may undertake more than one migration movement during the intercensal period. The differences will be the greater the longer the interval between the reference dates of the censuses and the higher the number of intermediate migrations during the period. Secondly, registers could show higher results because they capture residence changes at the moment they occur and/or are declared, whereas in the censuses immigrations are revealed by *surviving migrants* when they are interviewed, always assuming that there are no problems of historical memory.

Nevertheless, in the case of **Greece** and **Poland**, special efforts have been made in their last censuses to collect information on immigration. In **Poland**, a special questionnaire contained detailed questions to be answered by those who came or returned to **Poland** (after at least 12 months abroad) in the years 1989-2002[21]. The situation is different in the case of **France**. In that country, the Rolling Population and Housing Census can provide yearly estimations of migration flows through questions on previous residence and year of arrival in **France** (for the foreign born persons).

The LFS is another statistical source existing in all the countries covered by the project. But it is not useful for measuring migration flows in most of them. The basic problems[22] are mainly due to: a small number of respondents with foreign citizenship in the sample, which is not corrected with poststratification; the higher non-response among the foreigners; and the fact that many labour migrants live in collective households that are not sampled. In the PROMINSTAT country reports of **Cyprus**, the **Czech Republic**, **Denmark**, **Hungary**, **Lithuania**, **Malta**, **Poland**, **Portugal**, **Slovenia** and **Slovakia** there are explicit references to these problems. Nevertheless, the use of the LFS seems adequate in **Germany**, **Estonia**, **Italy** and **Switzerland** as they have more or less specific sample LFS designs for foreigners.

The 2008 LFS included an ad-hoc module on migration. Its results may provide explanatory information not available in administrative sources. While the main focus

[19] In **Germany**, the 2011 census will be mainly register-based, with some additional data collected through sample surveys (http://www.statistik-portal.de/Statistik-Portal/en/Zensus/en_methode.asp). In **Sweden**, a register-based census is planned (http://www.hob.scb.se/engelsk_new.asp).

[20] In the Recommendations for the 2010 Census round (UN, 2006) there is a proposal to include a question on calendar year and month of the last arrival to the current place of usual residence.

[21] The questions included among others: place of previous residence, period of stay in the previous place of residence, the reason for changing the previous place of residence, the source of maintenance in the previous place of residence.

[22] See paragraph E.2.b for a wider explanation.

of the ad-hoc module is on the integration of migrants and their descendants, the information may be also relevant for the study of migration flows, e.g. the question about the reason for migration.

As well as the population censuses and the LFS, the majority of the countries have additional administrative registers that could complete the characteristics of their migration flows. There exist registers of aliens, refugees and asylum registers, migrant workers or work permits databases and registers related to social benefits, to quote the most popular examples. However, these registers respond to the different administrative needs and legal requirements of each country[23] and they only provide information on one part of the migration flow.

Finally, cross-sectional surveys have been conducted in some countries, which may provide some additional information about the inflows of migrants. For instance, Statistics **Estonia** carried out the immigrant population survey for the first time in 2008 (where immigrant population was defined as the persons whose parents had been born in a foreign country)[24] and the Spanish National Statistics Institute ran the 2007 Immigrants National Survey (known as ENI) whose objective is to provide information on the social and demographic characteristics of persons born abroad and on their migratory experience.

E.1.b Availability of statistical information on migration flows and demographic characteristics of migrants at the time of migration

Information on international migration flows in the 27 countries studied, available from the statistical sources described in the previous section, has been summarised in Table 4. With the exception of **Malta** – which does not keep statistics on international migration flows- and **France**, **Greece** and **Portugal** – which do not collect data on emigration flows - the table shows that the countries can provide total figures for immigration and emigration flows. In most of the countries, these figures include both nationals and non-nationals, except in **France**, **Greece** and **Portugal**, which only record migrations of non-nationals.

The PROMINSTAT reports of **Cyprus**, **Belgium**, **Estonia** and **Luxembourg** mention various problems concerning the quality of statistical information on migration flows. In the case of **Cyprus**, the flow measured by the passenger survey does not match the flow measured through other sources. In **Estonia**, until recently flow data were not published as official statistics due to coverage problems. With regard to **Belgium** and **Luxembourg**, the problems are based not on totals but on the quality of the breakdown by country of previous/next residence. This classification is not currently available in **Luxembourg** and it is expected that its quality will improve in the future in **Belgium**. In **Poland**, data on flows by citizenship were considered as unreliable and have been provided to Eurostat only since the reference year 2006.

All the countries that provide total immigration and emigration flows also collect certain characteristics of these flows. These characteristics refer to the moment of arrival or departure –in the case of sample surveys conducted during border controls

[23] For an extended explanation see 5.2.1.
[24] Statistics Estonia: http://www.stat.ee/32141 (accessed on 18 June 2009).

or some population registers such as **Denmark** since 2007 - or to a posterior period in which the migration is declared or registered –the majority of population registers-. The main characteristics of migrants include sex, age, citizenship and country of birth, and are available in most countries.

Table 4.-Availability of information on migrants and migrations in the datasets

Country code	Flow	Total	Age	Sex	Country of birth	Citizenship	Country of previous / next residence	Marital status	Educational level	Occupational status	Purpose of stay	Other features	Long and short term
AT	IMMI&EMI	+	+	+	+	+	+	+	+[1]	+[1]	-	-	+
BE	IMMI&EMI	+	+	+	+	+	-Q	+	-	+[1]	+[1]	+	+[2]
CY	IMMI&EMI	+	+	+	+	+	+	-	-	-	+	+	+
CZ	IMMI&EMI	+	+	+	+	+	+[I]	+[E]	-	-	+	+	-
DE	IMMI&EMI	+	+	+	-[3]	+	+	+	-	-	-	+	ni
DK	IMMI&EMI	+	+	+	+	+	+	+	-Q	-	+[q]	-	+
EE	IMMI&EMI	+[q]	+[q]	+[q]	+[q]	+[q]	+[q]	+[q]	+[q]	+[q]	+[q]	+	+[q]
EL	IMMI	+[f]	+[f]	+[f]	-	+[f]	-	+[f]	-	-	+[f]	+[f]	±[4]
ES	IMMI&EMI	+	+	+	+	+	+	-	+	-	-	-	-
FI	IMMI&EMI	+	+	+	+	+	+	+	-	+	-	+	-
FR	IMMI	+[f]	+[f]	+[f]	+[f]	+[f]	-	-	-	-	+[f]	-	+[f]
HU	IMMI&EMI	+	+	+	+	+	+[f, I]	+	+[f, I]	+[f, I]	+	+	+
IE	IMMI&EMI	+	+	+	-	+[I]	+	-	-	-	-	-	-
IT	IMMI&EMI	+	+	+	+	+	+	+	+	+	-	+	-
LT	IMMI&EMI	+	+	+	+	+	+	+	+	-	+	+	+
LU	IMMI&EMI	+	+	+	+[2]	+	-Q	-	-	-	-	-	-
LV	IMMI&EMI	+	+	+	+	+	+	+	-	-	-	+	-
MT	IMMI&EMI												
NL	IMMI&EMI	+	+	+	+	+	+	+	-	-	-	+	-
PL	IMMI&EMI	+	+	+	-[3]	+	+	+	+[5]	-	-	-	+
PT	IMMI	+[f]	+[f]	+[f]	+[f]	+[f]	+[f]	-	+[f]	+[f]	+[f]	-	-
SE[1]	IMMI&EMI	+	+	+	+	+	+	+	+	+	+[I]	+	-
SI	IMMI&EMI	+	+	+	+	+	+[E]	+	+[6]	+[6]	+[f, I]	-	+
SK	IMMI&EMI	+	+	+	+[f]	+	+[7]	+	+	-	+	+	+
UK	IMMI&EMI	+	+	+	+	+	+	+	-	-	+	-	+
NO	IMM&EMI	+	+	+	+	+	+	+	-	-	+[f]	+	±[8]
CH	IMMI&EMI	+	+	+	-[9]	+[f]	-	+	-	+[f]	+[f, I, 10]	+	+[f]

Notes: +: Available (published or on request)
-: Not available
+[f]: Data available on foreigners, but not on nationals
+[I]: Data available on immigrants but not on emigrants
+[E]: Data available on emigrants but not on immigrants
[q]: Low quality of data
Q: Statistics are not published due to the low quality of data
ni: No information
±: Definition of long and short term differs from the UN definitions

[1]: Information has to be collected from other (linked) sources
[2]: Relevant statistics may be available in the near future
[3]: Only PLACE of birth
[4]: Permit type may help to distinguish short and long term migrations
[5]: Until 2005
[6]: Only for employed people
[7]: Country of next residence of foreigners is not available
[8]: Long-term: > 6 months, short-term: 3-6 months
[9]: Only Switzerland or other country
[10]: Since 2002

Source: PROMINSTAT project Country Reports and National Statistics Institute.

The country of previous/next residence, although collected in many countries, is somewhat less common. Concretely, this variable is missing in **Greece**, **France** and **Switzerland**; in the **Czech Republic** it is not available for emigrants. In **Slovenia** it is available only for nationals, in **Hungary** – only for immigrating foreigners.

Apart from the above characteristics, there are others that are regularly collected. The marital status of migrants is available in almost all the countries, except **Cyprus**, **Spain**, **France**, **Ireland**, **Luxembourg** and **Portugal** and 16 countries also collect the purpose of stay (**Belgium**, **Cyprus**, **Czech Republic**, **Denmark**, **Estonia**, **Greece**, **France**, **Hungary**, **Lithuania**, **Portugal**, **Sweden**, **Slovenia**, **Slovakia**, **the United Kingdom**, **Norway** and **Switzerland**). In addition, some countries have information on the educational level of migrants (**Austria**, **Estonia**, **Spain**, **Hungary**, **Italy**, **Lithuania**, **Poland**, **Portugal**, **Sweden**, **Slovenia** and **Slovakia**) and on their occupational status (**Austria**, **Belgium**, **Estonia**, **Finland**, **Hungary**, **Italy**, **Portugal**, **Sweden**, **Slovenia** and **Switzerland**). Other available characteristics are: type of stay (**Czech Republic**), religion (**Denmark**), ethnic nationality (**Estonia** and **Slovakia**), information on residence permits and on acquisition of citizenship (**Estonia**), native language (**Finland** and **Latvia**), number of children (**Latvia** and **Norway**), parental countries of birth (**the Netherlands**, **Sweden** and **Norway**), information on family relations (**Finland** and **Hungary**), sector of activity (**Italy**), year of first immigration (**Norway**), spouse's nationality (**Switzerland**) or mother's nationality (**Switzerland**).

Finally, the distinction between long term (at least one year) or short term (between three and 12 months) flows is not always available. **Austria**, **Belgium**, **Cyprus**, **Denmark**, **Estonia**, **France**, **Hungary**, **Lithuania**, **Poland**, **Slovenia**, **Slovakia**, the **United Kingdom** and **Switzerland** explicitly confirm the possibility of distinguishing migration flows by length of stay. While using a definition of long and short term migration different from the UN definition (stay above or below 6 months, respectively), **Norway** can also distinguish short and long term migrations.

E.2 Reliability of flow data

E.2.a Administrative sources

Administrative sources, such as population registers, have many advantages. They provide comprehensive counts and are not subject to sampling errors like surveys. This type of source is continuously updated (at least in theory) and is not reliant on the survival of immigrants –physically or by remaining in the country- up to the moment of the interview, as is the case with household surveys or censuses. Moreover, they can account for all the movements of people, whereas surveys or censuses often only capture either the last movement of each migrant or the place of residence at some date in the past, but not all intermediate places of residence. As opposed to surveys, which are affected by sampling errors, registers allow us to make full breakdowns and, insofar as they can be linked with other registers, the information available is much richer.

However, administrative databases were not primarily designed for statistical purposes and are therefore imperfect sources of information. First, as they respond to the different administrative needs and legal requirements of each country, which also vary over time, the comparison of data - inter-temporal or between countries - could be unsuitable due to the different coverage of the registers. Moreover, we should remember that using administrative statistics to measure migration flows has the risk of not exactly capturing the phenomenon, which would lead to incorrect coverage. This is the case with registrations of the changes of residence with no real migration. The frequency of these false migrations with no real movement depends on the individual advantages to be gained from registration[25] and the care taken by authorities in the management of their registers.

Second, although in many countries registration of the changes of residence in the registers is compulsory, there is no guarantee of complete coverage of flows as it depends on the (dis)incentives of registering a movement[26]. To compare countries or make a longitudinal analysis in a country we should bear in mind the set of individual benefits derived from registering or not registering movement at a given moment. Of the analysed countries, 10 PROMINSTAT country reports make explicit reference to some of the advantages (and disadvantages) implied by registration. These are **Belgium**, **Denmark**, **Estonia**, **Spain**, **Finland**, **Hungary**, **Luxembourg**, **the Netherlands**, **Sweden** and **Norway**. The most common incentives range from access to public schools, social aid, housing, social security, parking or health system, to access to opening a bank account (**Finland** or **Norway**), to establishing a telephone line (**Norway**) or to getting a driver's licence (**the Netherlands**). Obviously, the loss of these advantages could also imply a strong disincentive to de-register when an emigrating. On the other hand there might also be some advantages of being registered as living abroad (e.g. buying a car tax-free, returning with a foreign spouse, not paying local taxes).

Third, the time elapsed between the moment of the migratory movement and its reporting in the register is another issue that impacts the reliability and comparability of administrative sources. Normally, although there is an obligation to report migration within a short period, it is often declared after a certain delay. This implies that migration flow data based on registers do not capture the phenomenon in real time. Only in **Denmark**, from July 2007, is it the actual time of the migration and not the time of the registration that determines the time of the migration in the statistics.

There are several countries in which the date of im/emigration registered for foreigners may be not the date of movement, but that of the concession/expiry of the residence permit. This is the case in **Belgium**, **Czech Republic, Estonia, Portugal, Slovenia** and **Slovakia**, where the immigration of a non EEA foreigner is registered at the moment when the residence permit is granted and, vice versa, when the permit expires the person is automatically considered to have emigrated. Conversely, in **Denmark**, even when a residence permit has expired the permit holder is retained on the register until the person concerned declares his/her emigration.

[25] See Ródenas and Martí (2009) for the case of Spain.
[26] Obviously, when there is no obligation to report residency changes, the role of (dis)incentives is even more important.

Fourth, the quality of information of administrative sources can be very unequal – even within the same country- as it depends on the local responsible for the collection and initial processing of the data. The diligence of the local authorities in terms of the correct management of the register could be encouraged in the cases where the central government gives financial aid according to population size[27]. This is the case for example in **Belgium**, **Hungary**, **Poland and Spain**.

Due to the above, and given that the individual incentives to register an immigration are higher than those for an emigration, the registers capture immigration flows better than emigration flows. In almost all countries, emigration flows depend on the declarations of the emigrants or, as mentioned earlier for foreigners, on the expiry of residence permits. However, in the Nordic countries and due to international agreements between them, emigrants to Nordic countries (**Denmark**, **Finland**, **Iceland**, **Norway** and **Sweden**) are only recorded as emigrants in the exit country when the country of immigration notifies that the person must be registered as having emigrated to that country.

The problems of coverage and reliability of the administrative sources can be reduced by applying data checking and cleaning procedures. The most used method in the countries studied is to centralise the population register, with the assumption that errors and duplicate entries will be corrected. Moreover, some countries, for example, **Italy**, **the Netherlands**, **Norway**, **Spain** and **Sweden** use some kind of data checking procedure (reviews, comparison with other sources). Within the Nordic countries, there is also a system for notification of migration between the local population registers. In some countries, flow data concerning registered movements are modified through administrative corrections. This is the case for example in the **Netherlands**, where administrative corrections constitute an important share of total emigration. In this case the corrections refer to administrative deregistration of persons who had no contacts with administrative bodies for a significant period of time or were identified not to be resident through a direct check (van der Erf, 2005). In the case of foreigners, the administrative deregistration covers in particular the persons whose residence permits expired or who are in an irregular situation for other reasons.

Although it would be difficult to rank all the countries according to the quality of their flow statistics produced based on the administrative registers, a general evaluation can be found for some countries in the PROMINSTAT country reports. Thus, whereas **Denmark**, **Finland**, **Norway**, **Slovenia** and **Sweden** provide high quality data, the reliability of information on flows in **Estonia**, **Lithuania**, **Luxembourg**, **Latvia** and **Poland** is low. It should be noted that the quality of data in **Estonia** improved significantly since 2006, as the registration of residence in **Estonia** is compulsory since May 2005 and foreigners are required to register their residence since May 2004. Moreover, recently **Estonia** produced retrospectively migration flow data for the period since 2000, combining data from the population register and the register of residence and work permits of the Citizenship and Migration Board[28] (Statistics Estonia, 2009).

[27] In this case, emigration might be underregistered.

[28] Estonian population figures used to be produced without taking international migration into account. Since 2009, two sets of figures are produced: with and without international migration, and this

E.2.b Statistical surveys

As mentioned earlier, sample surveys are used to produce statistics on international migration flows in **Ireland**, **Cyprus** and the **United Kingdom** only, although in **France** the rolling census of population can also provide estimations of migration flows through questions on previous residence (for all interviewed persons) and year of arrival in **France** (for the foreign born persons). To assess whether the estimation of migration flows through surveys is reliable, we take into consideration the sampling method used in the survey, since the accuracy of results and the sources of bias depend on it. Naturally, each type of survey uses a different sampling method.

Cyprus and the **United Kingdom** rely on sample surveys of passengers. These surveys cover international travellers arriving in and leaving the country, thus the sampling unit is a person, whereas in **Ireland** and in the **French** rolling census sample surveys of households/dwellings are carried out, covering people whose usual residence is in the country.

The accuracy of estimation depends on the size of the sample, on the heterogeneity of the variable studied in the sample unit, and on the efficiency of the stratification technique. With regard to the first aspect, it is known that migration domain sizes are generally small relative to the whole population, especially in the case of international flows. Hence, the estimation on migration flows could present high sampling errors in countries where the sample universe is the entire population. This could be the case of the **Irish** survey where the Quarterly National Household Survey -QNHS- (until September 1997 known as the annual Labour Force Survey) is the principal source[29] of information for the estimation of international migration flows. The sample size chosen to provide information on employment –the target of this survey- is probably too small to estimate international migration flows, causing high sampling errors.

Stratified sampling is the technique used to obtain trustworthy estimations. This method increases precision and contributes to reducing sampling errors but to be efficient the variables used for the stratification should be correlated with the object variables of the study (for example, nationality). However, the Quarterly National Household Survey in **Ireland** does not use any of this kind of variable as a stratification criterion.

Moreover the error of estimation of migration flows in **Ireland** is probably high also due to the fact that the final sample units are households, which include one or more individuals. For cluster sampling to be as precise as simple random sampling for a certain characteristic there should be no correlation in the variable among the members of the cluster (household), in other words, no homogeneity in the variable for all the members of the household. However, it is fairly common for the migration characteristic to affect the whole family group. This means that when a sample unit is

practice will continue till the 2011 Census. Currently, the main official population figure continues to be the one without international migration.

[29] This survey allows identification of international immigrants defined as persons who are living in a country at the time of the survey, having been resident outside the country a year before.

interviewed after migration, in general there is not only one migrant captured but the whole household. So when there are problems in capturing immigrants due to domain size, each non captured sample unit results in far fewer individual migrants being counted.

Correct estimation of emigration flows is also not possible through an LFS survey as conducted in **Ireland**. The questionnaire includes a question asking the respondent whether anyone who usually lived in the household on a certain date is now living abroad. This survey approach yields underestimates of outward flows since, when complete households emigrate, there is no-one left behind to supply the necessary information to interviewers. Thus emigration of entire households is not captured.

In **France,** serious accuracy problems are not expected in the estimation of international immigration flows when using the census. The sample unit is also a household, but as its average household size and its proportion of households with two or more people are smaller than in **Ireland**[30], the homogeneity effect of the migration variable in the cluster will not be such a problem. Furthermore, the sample size of the **French** rolling census is much higher than in the **Irish** QNHS[31].

Apart from the problems of the lack of precision, the estimation of migration flows is also affected by the typical sources of bias: the suitability of the sampling frame and its updating, and non-response. With regard to the sampling frame, all countries use updated sampling frames, but in **Ireland** and in the **United Kingdom** the sampling frame does not cover the whole target population. **Ireland** only uses private households to construct their samples and, contrary to **France**, does not sample collective households. This sampling plan could be a source of underestimation due to the fact that the first places of residence for many foreign immigrants (for example asylum seekers) are reception centres, hostels, or similar establishments[32]. In the **United Kingdom**, the International Passenger Survey (IPS) excludes migration via land routes between the **United Kingdom** and **Ireland** and it also excludes many asylum seekers and their dependents. For this reason, the Office for National Statistics makes appropriate adjustments in their estimations. In addition, as the IPS measures the "intended" length of stay which might differ from the "actual", its estimates are also then adjusted for those who switched from visitor/short term migrant to long-term migrant status, and back the other way from migrant to non-migrant status.

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[30] See Martí and Ródenas (2007).

[31] The sampling rate in **Ireland** is equal to 3% (Eurostat, 2009), whereas this rate reaches 8% in **France**. According to the PROMINSTAT report for **Cyprus**, the *Passenger Surveys for Arrivals and Departures* have problems of sample size as well; a statement which is surprising when the sampling rate is equal to 5% and 2% respectively, while this rate in the **United Kingdom** is equal to 0.2% and at no time is a sample size problem mentioned in its report. We do not know the reason for this because there is hardly any information about the methodology used in this survey in the **Cyprus** report, the PROMINSTAT database or even on the website of the CYSTAT responsible for this survey. The **United Kingdom** problems with sample size become visible only when producing disaggregate statistics, but not on the level on total immigration or emigration flows.

[32] Nevertheless, according to the Irish Central Statistics Office, "the migration estimates are compiled against the backdrop of movements in other migration indicators such as the number of PPS numbers allocated to non-Irish nationals, the number of work permits issued/renewed and the number of asylum applications."
(http://www.cso.ie/releasespublications/documents/population/current/popmig.pdf, accessed on 16 July 2009).

In any case, the most important source of bias in surveys comes from non-response. The bias happens when the non-response is correlated with population characteristics. It is possible that migrants, as opposed to non-migrants, have a greater probability of forming part of the non-response group for different reasons, such as the fear of being expelled from the country or not understanding the language. Therefore, it is very important for the questionnaires to be available in the greatest possible number of languages, because if not the surveys could be biased towards migrants whose proficiency in one of the available languages is good. In **France** and the **United Kingdom** the questionnaires are available in more than ten languages while in **Ireland** and in **Cyprus** the questionnaire is only available in English.

The reweighting or post stratification procedure serves to correct the bias brought about by non-response. Correcting the bias requires the use of auxiliary variables related to international migration in order to re-establish the weight or representativeness of the group studied. As far as we know, none of these countries work with variables related to international migration.

Finally, there is an additional problem with the **Irish** survey, which we call *the impossible answer* (Martí and Ródenas, 2007). Such a problem occurs when estimating immigration flows through surveys where a sample rotation scheme is used and the question designed to calculate migration flows is: "*What was your place of residence one year ago?"*, as in the case of QNHS. The *impossible answer* increases imprecision and generates bias, since the temporal limit (a year) in the question for migration flows, and the moment of the interview are not neutral when combined with the national sample rotation scheme. The problem is that the persons who stay over one year in the survey sample according to the rules of the rotation scheme are by definition not able to give a different place of residence one year ago, so the chance of catching an immigrant is reduced by the rotation scheme.

In any case, even if these surveys can provide unbiased and precise estimations of the total annual international migration flows, the relatively small sample size of the surveys in general considerably limits what can be inferred from them –as opposed to the registers- and does not allow the accurate estimation of the distribution of these migration flows by any variable (e.g nationality or age). Only the most numerous immigrant groups can be reliably estimated. For example, in the case of the immigration to the UK in 2007, the estimate of 87819 thousand Polish immigrants is reliable, but the estimates of 4613 Greeks or 2139 Lithuanians have errors exceeding 30% and are not considered reliable.

F. Comparability of European data on international migration flows

F.1 Differences in the general coverage of the main source of data on migration flows

A number of problems of international comparability of migration flows statistics derive from the fact that the main information sources used in each country - registers or surveys - have different target populations.

Registers usually capture the population that legally resides in the country. This is the case in the majority of the countries which only record nationals, EEA citizens and non-EEA citizens with residence permits. **Spain** is the only country with a population register where the current legislation allows inscription of the entire population regardless of their legal status[33]. Therefore, in **Spain** the stocks and migration flows of foreigners without residence permits are included in the totals. By allowing the registration of all foreigners, the effects of regularising immigrants on the Spanish Population Register are relatively small, unlike in other countries where periodic regularisations of immigrants can cause sharp increases in the inscriptions to the register and immigration flow numbers which do not correspond with the real moment of arrival.

Table 5.- Coverage of asylum seekers, refugees and irregular immigrants in the principal sources of migration flow data

Country Code	Country name	Refugees	Asylum Seekers	Irregular Immigrants
AT	Austria	+	+[1]	-
BE	Belgium	+[2]	[+][3]	-
CY	Cyprus	+	+	+
CZ	Czech R.	+	-	-
DE	Germany	+	+	
DK	Denmark	+	-	-
EE	Estonia	+	-	-
EL	Greece	+	-	-
ES	Spain	+	+	+
FI	Finland	+	-	-
FR	France	+	-	-
HU	Hungary	-	-	-
IE	Ireland	+	+	+
IT	Italy	+	-	-
LT	Lithuania	+	-	-
LU	Luxembourg	+	-	-
LV	Latvia	+	-	-
MT	Malta	ni	ni	ni
NL	Netherlands	+[4]	-	-[1]
PL	Poland	+	+	-
PT	Portugal	+	-	-
SE	Sweden	+	-	-
SI	Slovenia	+	+	-
SK	Slovakia	+	-	-
UK	U. Kingdom	+	+	+
NO	Norway	+	-	-
CH	Switzerland	+	-	-

Notes:
ni: no information
[1]: Included partially, if registered
[2]: Since 2007, included in data provided to Eurostat
[3]: From 2010, will be included in data provided to Eurostat
[4]: A stay of at least six months is required

Source: PROMINSTAT project Country Reports and the National Statistics Institutes.

[33] According to the PROMINSTAT database, some illegal residents may be counted in the **Netherlands**, where some municipal population registers include illegal residents if they request registration.

The countries that use sample surveys (**Cyprus**, **Ireland** and the **United Kingdom**) all sample the irregular foreign population, at least in theory.

The inclusion or not of asylum seekers and refugees does not follow a homogenous criterion either. Almost all the countries (see Table 5, above) include refugees in their registers as they have residence permits. Only in several countries, asylum seekers are counted as well. In **Cyprus**, **Ireland** and the **United Kingdom**, both refugees and asylum seekers may be present in the survey sample[34].

Further comparability problems, related with the coverage of registers, may arise due to exceptions from the general registration procedures in several countries. In **Denmark**, **Finland**, **Hungary**, **Italy** and **Luxembourg** there is a legal possibility that people living abroad can remain inscribed in the national register and are therefore not counted as emigrants. In **Lithuania** the problem is different (more related to reliability), as a large number of people who have not changed their passport since 1992 are not included in the Residents' Register.

F.2 Differences in the residence and duration of stay criteria

Apart from the differences in the groups included in the target population, another problem is that countries do not use the same criteria to identify migrants. This identification, and therefore the possibility to estimate a higher or lower number of immigrants and emigrants, depends on two circumstances. For some countries a person is a migrant only if the movement implies a permanent change of residence, for others it is enough if the usual place of residence is changed for a certain minimum period. These requirements, in turn, may differ for nationals, foreigners from EEA countries and non-EEA foreigners, as well as for immigration and emigration statistics. We use the term "permanent migration" having in mind its meaning as "definite migration", i.e. the situation where the migrant plans or has a permit to settle in the destination country. In **Cyprus** and **Switzerland**, the term "permanent migration" is used in a wider sense, having in mind all stays lasting more than one year[35]. We think it is more appropriate to use the term "long-term migration" in the latter case, in accordance with the UN recommendations of 1998.

Table 6 summarises the information available for the 27 European countries. The majority of countries do not require migrants to make a permanent change of residence. Changes of permanent place of residence are counted only in **Poland** and **Slovakia** (in the latter only in the case of statistics by previous/next country of residence), as well as in the **Czech Republic** in the case of Czech nationals and EEA citizens. The usual situation is that persons coming or leaving for temporary stay are counted as migrants as well, but the minimum duration of stay required to be counted varies between the countries and citizenship groups. Some countries, e.g.

[34] In the **United Kingdom**, moreover, certain adjustments are made to better capture them.

[35] For example, in **Switzerland** the term "permanent resident population" refers to all persons who officially reside in **Switzerland** for the entire year and includes both foreign citizens holding a permanent residence permits as well as those holding a residence permit valid for at least one year. In **Poland** and the **Slovakia**, only the first category is included in the permanent population. It is worth to note that in the old UN recommendations, issued in 1953, the term *permanent immigrant* was used in a similar sense as now in **Switzerland** but was replaced by the term *long-term migrant* in 1976.

Germany, **Luxembourg** and **Spain**, put no *minimum* limit to the length of stay/absence.

Table 6.-Comparability of statistics on international migrations flows: the residence and *minimum* duration of stay criteria

Residence criterion (duration of stay, duration of permit, permit expiry etc.)		Nationals	Non-nationals	
			EEA citizens	Non- EEA citizens (with residence permit)
Registration/deregistration of short term or long term residence				
	No time limit	BE, DE, ES, IT[I], LU	ES, DE, IT[I], LU	DE, ES, LU
	≥ 90 days	AT,	AT, BE	AT, BE, DK*, IT[I],
	≥ 4 out of 6 months for immigration ≥ 8 out of 12 months for emigration	NL	NL	NL
	≥ 6 months	DK*, LT, NO,	DK*, LT[E], NO	LT[E], NO
	≥ 1 year	CY, EE, FI, IT[E], LV, SE, SI	CY, CH, EE, FI, IT[E], LT[I], LV, PT, SE, SI	CY, CH, CZ, EE, EL, FI, FR, LT[I], LV, PT, IT[E], SE, SI, SK[3]
Expiry of the permit of an immigrant				BE, CZ, LT, LV, SI, SK
Intention to stay 1 year or more		CY, UK	CY, UK	CY, UK
Change of place of usual residence compared to one year earlier		IE	IE	IE
Registration/deregistration of permanent residence		CZ, PL, SK	CZ, PL, SK	PL, SK[4]

Notes:
EE: Until recently, no official statistics on international migration flows has been published. *Migration* report, published by Statistics Estonia in January 2009, contains 2004-2007 immigration and emigration data, and the *Definitions* section explains "immigration" as "the action by which a person, having previously been a permanent resident in one settlement unit, moves to reside permanently in another settlement unit for a period which is or which is expected to be of at least 12 months"
HU, MT: no information
[E]: emigration
[I]: immigration
*: Immigration from EEA country: 6 months, immigration from non-EEA country – 3 months (*PROMINSTAT country report for Denmark*, 2009)
**: Emigration to the Nordic countries: the rules of the destination country apply
[1]: With permanent residence permit
[2]: Residence criterion is long term.
[3]: Flow statistics by country of citizenship
[4]: Flow statistics by country of previous/next residence

Source: PROMINSTAT project Country Reports and the National Statistics Institutes.

Ireland is the only country where immigrants are identified though the question about their place of residence one year earlier.

The different definitions of target population in the registers or surveys, along with the different criteria for identifying migrants that form the target population of flow statistics impact on the comparison of international migration flows among the

countries studied. The inequalities in the conditions imposed by each country can lead, in some cases, to the counting of international immigration movements that do not appear as emigrations in the official statistics of the origin countries, and vice versa.

F.3 Differences in definitions of migration measurement: date and persons versus events

Another aspect that hinders the international comparability of flow data is the date taken as the date of migration. Obviously, the date of arrival/departure is the proper date. However, only a few countries use this date to determine the moment of migration (see Table 7). Most countries count migrations on the date of registration/deregistration, which for foreigners may coincide with the date of concession/expiry of the residence permit. Only **Portugal** uses the date of request of the residence permit while **France** uses the date of issue of the first residence permit.

The information that countries provide in their aggregate data refers in general to migration flows during one year, which means that using the date of registration/deregistration to determine the date of migration might not be a serious problem in countries in which, on average, the time lapse between the actual date of arrival/departure and the date of registration/deregistration is short. If we could recalculate the series of migrations in these countries using the date of arrival/departure instead of the date of registration/deregistration, there would probably not be any significant changes. Only when this average lapse is long, the use of the date of registration/deregistration becomes a serious problem in the measurement of migration flows. In this case, changes in migration trends are registered with a delay. Another problem concern Irish flow data: they refer not to calendar years but to periods from mid-April to mid-April.

A characteristic of the aggregated flow data is that they refer to a period, not to a moment in time, and there may be a difference between counting people and counting movements, in the sense that the same person can make several migrations over a period of time. Only in the countries where the duration of stay criterion is more than six months for both immigration and emigration, it does not make much difference whether events or persons are measured, because the result should be almost the same.

From the research point of view, the ideal situation would be if both measures (events and persons) were produced in the remaining countries, as they are both objects of interest in the analysis of the phenomenon. This refers to **Austria**, **Belgium**, **Germany**, **Italy**, **Luxembourg and Spain**, as well as **Slovenia** until its change of the definition in 2008. Unfortunately, all these countries count migration events only[36]. We may expect that the measurement of migration flows will give in these countries higher numbers than in the partner countries measuring the same flow.

[36] It is possible that some countries might give the two measures through micro-data. For example, **Spain** provides a measure of events in the aggregate data, but using the micro-data it is possible to find a measure in people.

Table 7.-Comparability of data on international migrations flows: date of migration and the contents of aggregate statistics (events or persons)

Country code	Immigration or Emigration	Date of migration	Events/ persons
AT	IMMI&EMI	Date of registration/deregistration	Events
BE	IMMI&EMI	Date of registration/deregistration	Events
CY	IMMI&EMI	Date of arrival/departure	Persons
CZ	IMMI&EMI	Date of registration/deregistration	Persons
DE	IMMI&EMI	Date of registration/deregistration	Events
DK	IMMI&EMI	Date of arrival/departure	Events
EE	IMMI&EMI	Date of registration/deregistration	Persons
EL	IMMI	Date of permit issue	Events
ES	IMMI&EMI	Date of registration/deregistration	Events
FI	IMMI&EMI	Date of registration/deregistration	Events
FR	IMMI	Date of the issue of the first residence permit	Persons
HU	IMMI&EMI	Date of arrival/departure or date of residence permit expiry	Persons
IE	IMMI&EMI	Year of arrival/departure[1]	Persons
IT	IMMI&EMI	Date of registration/deregistration	Events
LT	IMMI&EMI	Date of registration/deregistration	Persons
LU	IMMI&EMI	Date of registration/deregistration	Events
LV	IMMI&EMI	Date of arrival/departure or date of residence permit expiry	Persons
MT	IMMI&EMI	ni	ni
NL	IMMI&EMI	Date of registration/deregistration	Persons
PL	IMMI&EMI	Date of registration/deregistration	Events
PT	IMMI	Date of permit request	Persons
SE	IMMI&EMI	Date of registration/deregistration	Persons
SI	IMMI&EMI	Date of registration/deregistration	Events
SK	IMMI&EMI	Date of registration/deregistration	Persons
UK	IMMI&EMI	Date of arrival/departure	Events
NO	IMMI&EMI	Date of registration/deregistration	Events[2]
CH	IMMI&EMI	Date of arrival/ ni	Persons

Notes:
ni: no information.
[1]: Flow statistics are prepared for periods from mid-April to mid-April.
[2]: Standard tables published on events, but statistics on persons published as well.

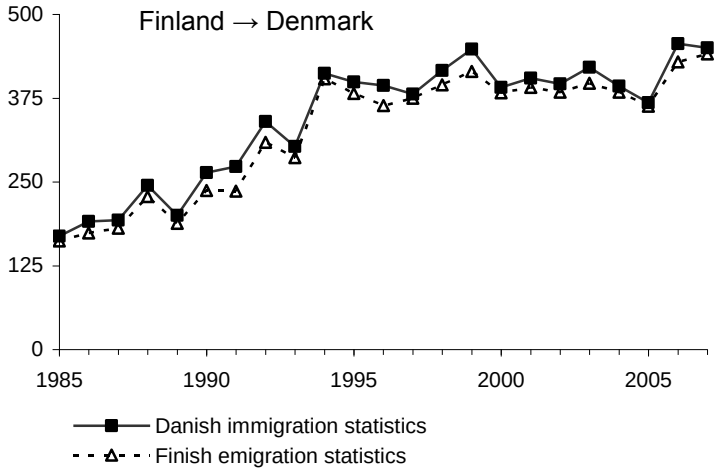
Source: PROMINSTAT project Country Reports and the National Statistics Institute.

F.4 Differences in flows reported by receiving and sending countries

Taking into account the above considerations, we may expect to observe significant differences between the data on immigration reported by the receiving countries and those on emigration reported by the sending countries. The exception is inter-Nordic migration, due to their international agreements. As mentioned earlier, emigrants to Nordic countries (Denmark, Finland, Norway and Sweden) are only recorded as emigrants in the exit country when the country of immigration notifies that the person

must be registered as having immigrated to that country. As a result, the data on flows between any two Nordic countries, reported by both countries, are comparable (Figure 1).

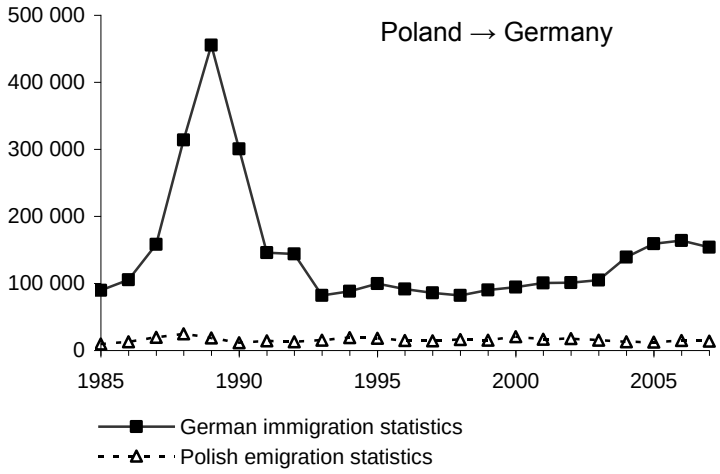
Figure 1. Migration flows from Finland to Denmark (1985-2007) according to Finish and Danish statistics



Source: Eurostat data.

An extensive illustration of the problem may be found in Kupiszewska and Nowok (2005, 2008), where migration flow data of selected receiving and sending countries have been confronted. A particularly striking example is that of migration between Germany and Poland (Figure 2). According to the most recent data, migration flow from Poland to Germany in 2007 was 13,771 according to Polish statistics and 153,589 - so more than eleven times more - according to German statistics. Here the differences result mainly from the differences in the definitions.

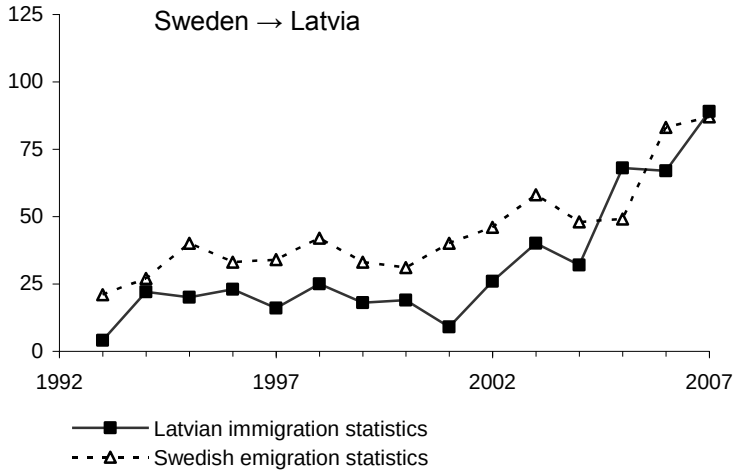
Figure 2. Migration flows from Poland to Germany (1985-2007) according to Polish and German statistics



Source: Eurostat data.

Significant differences appear even if two countries use in principle the same definition. The most important reason is the under-count of emigrants, when measured using administrative sources. However, in many countries we may observe a large under-coverage in the immigration data as well, for example in the case of inflows from Sweden to Latvia (Figure 3).

Figure 3. Migration flows from Sweden to Latvia (1993-2007) according to Swedish and Latvian statistics



Source: Eurostat data.

In general, we may expect that if the definitions are the same in two countries, then immigration data will be better than the emigration data from the partner country, but there might be exceptions from this rule, as shown above. If the definitions are different, such an assumption cannot be made at all.

When analysing migration flow data, it is important to look not only at the data of the country of interest, but both at the data of the countries of origin and destination. Particularly problematic is what to do in the case when one set of numbers is needed, while two differing sets of numbers are available: immigration data reported by countries of destination and emigration flow data reported by countries of departure.

In the past, various solutions were chosen by researchers, most often either assume the receiving country data or take a larger of the two values (Kupiszewski and Kupiszewska 2008). A better way would be to make the estimates assuming one common definition and taking into account the definitions and reliability of the existing data. So far, no such attempt has been undertaken. The most advanced is the estimation methodology developed within the MIMOSA project, presented briefly in Section D.4.

G. Conclusions and recommendations

Taking into account the above presented information on international migration statistics we conclude that internationally comparative research on migration flows in Europe are currently generally not possible. The main problem is the comparability of data, in particular the differences in definitions and sources used in various countries and in the coverage of the statistics. These differences imply that comparing migration flows in various countries would be often like comparing pears and apples.

Researchers undertaking any international comparisons should carefully check the meaning of the available data and investigate different sources. Comparisons may only be attempted if the data from various countries measure the same phenomenon. This may be more often feasible in the case of flows of non-EEA citizens than for total flows. The reason is that several countries do not collect data on flows of nationals and the rules for counting flows of nationals and EEA-citizens may be different than those for the third-country nationals. If the data are not internationally comparable, any conclusions may be drawn only separately for each country, for the categories of migration flows measured in the given country.

Researchers trying to go more deeply than just total flows and interested in various characteristics of migrants encounter not only the comparability problem, but also the problem of the lack of data. Features available in most of the countries are age, sex and country of citizenship of migrants. Information on previous or next residence is also often collected but is more problematic and may be missing especially in the case of data on emigration flows. Information on the country of birth and marital status of migrants is often collected in the databases as well, but the relevant statistics (flows by country of birth or by marital status) are usually not prepared. Other very important characteristics, in particular socio-economic characteristics such as educational level, employment status, reason or purpose of stay, are very frequently not available. Also, more detailed information about the regional distribution of migrants that are of interests for geographers or demographers preparing regional population projections are missing. Migration flow statistics are usually published without distinguishing short-term and long-term flows.

Most readily available data concerning migration flows are macro-data. The main source of these data are administrative registers, with no or a limited access to the micro-data for the researchers. As a consequence, research that want to go beyond the usually published statistics face the necessity of organising dedicated surveys.

It would be easier to propose solutions to the problems if we could assume that we have infinite resources at our disposal and the necessary power to enforce the changes. However, this is not the case and we need to take into account the constraints limiting possible changes. The constraints are quite substantial: there is a need for the political will of governments and statistical offices to plan and implement changes, the social acceptance of “statistical surveillance” and financial resources to be allocated to improve statistics of migration.

A good news is that there is increasing evidence that not only researchers but also the policy makers realised the limitations of existing migration data and the need for better statistics has been acknowledged at various administration levels. What is still

sometimes missing is the understanding that changes in data collection systems are needed in order to have better data. Also, constraints, remain in place, especially those related to the supply of financial resources and socially accepted level of controlling the society.

Clearly, improvement of international migration statistics requires international cooperation. In Europe, considerable progress is envisaged when the data prepared according to the *EU Regulation on international migration statistics* begin to be published. It should be noted that the last years brought in an evident improvement in migration statistics on international migration flows in some countries. In our opinion, this is a direct consequence of the preparations for the *EU Regulation*. Notably, Bulgaria and Greece started to provide flow data to Eurostat (Greece only for immigration), and Estonia will probably follow as its quality of data significantly improved and it began to publish statistics on international migration flows in 2009. Slovenia has changed its definitions and adopted the one year duration of stay rule in migration statistics. However, the scope for further improvement is still wide, both in the field of the international comparability of data, as well as in data availability.

If we want to facilitate interdisciplinary research, we need complex multidimensional data, which will incorporate migrants characteristics of interest to different, sometime quite distant disciplines of research. In practice, as many variables as possible should be collected, so that the researchers could chose the subset of variables they need. This would allow for linking the research conducted in different disciplines in the same country. In addition to the statistics on flows specified in the EU Regulation, statistics describing socio-economic characteristics of migrants are needed. The most sought-after variables include reason of migration/purpose of stay, social and educational characteristics (level/years of schooling, profession, employment status in the origin and destination country, type of economic activity (if employed), source of household's income, etc.). More detailed information on the region of origin and destination of migrants as well as the type of settlement of migrants' origin and destination is also needed.

The extension of the data characterising those who migrated to include both direct questions about reasons of their migration and their economic and labour market characteristics (their employment status; their salaries in the origin and in the destination if the have a contract, or their expectations for the earnings if they do not; their migration history, including economic and labour market performance, etc.) would allow us to replace quite imprecise proxy variables with actual explanatory variables. No doubt, this would be a tricky data collection. Perhaps a sensible solution is to create a pan-European longitudinal data collection focused on migration.

Statistical offices should investigate the possibility of linking existing administrative data sources to retrieve missing information. Researchers need better access to the micro-data from the administrative sources (anonymised ones). As far as international cooperation is concerned, wider exchange of information between receiving and sending countries may be helpful.

In order to improve availability of data for the research, it would be desirable that all the data provided by the NSIs to Eurostat are also made available at the NSI

website, together with the comprehensive metadata. This will considerably speed up the access to the data of individual countries. When the survey data are published, some measure of uncertainty or error should be provided, as is currently done by the UK when sending data to Eurostat.

For the comparative research on international migration flows the most important is the use of harmonised definitions. The way the definitions are harmonised may be agreed in various ways and the UN definition of long-term flows, adopted also in the EU regulation, would be an appropriate one[37]. However, one may wonder if the one year duration of stay is appropriate to insure the consistency of flow statistics with population stock statistics and the simultaneous proper representation of the actual geographical distribution of the population among various countries. In particular, we think that from the methodological point of view it might be more appropriate to count migration if the stay was six months or more during the year, that is if the migrant spent most of the year in the destination country. Such criterion of the duration of residence for the period of 183 days or more is already in use in the tax law of many countries. Currently, a definitions of migration based on the six months duration of stay is in place in Norway and partially (for some categories of migrants) in Denmark and Lithuania.

The final remark concerns data on irregular migration, the topic which lies outside the scope of this paper and is discussed by Drbohlav (2010). Here we just note that the availability of data on irregular migration flows is very problematic. The authors of the UN Recommendations (UN, 1998:3) mention that "undocumented or irregular migration is likely, by its very nature, to occur at the margin of State regulation and thus fail to be properly reflected in the statistics available. It is beyond the scope of these recommendations to provide guidance about the estimation methods or special data-collection procedures that may be used to obtain acceptable measures of irregular migration." Ten years later, such guidance are still missing and attempts to estimate the size of illegal migration are very scarce (e.g. Jandl, 2003). An overview of the available data sources, indicators, estimates and methods to estimate irregular migration flows have been recently prepared by Kraler and Reichel (2010), however without attempting to propose estimates of the total size of irregular flows. More effort is clearly needed in this field.

[37] Ideally, the actual duration of stay should be taken into account (the intention may change, so the statistics based on the intended duration of stay do not reflect the real situation).

PROMINSTAT Country Reports consulted for the study

	Country	Author(s)	Date of publication
1	Austria	Albert Kraler, Christina Hollomey and Alfred Wöger	May 2009 (updated December 2009)
2	Belgium	Nicolas Perrin and Quentin Schoonvaere	April 2009
3	Bulgaria	Anne Herm	February 2010
4	Cyprus	Martin Baldwin-Edwards	May 2010
5	Czech Republic	Dušan Drbohlav and Lenka Lachmanová-Medová	May 2009
6	Denmark	Anita Lange and Thomas Michael Nielsen	April 2009
7	Estonia	Université catholique de Louvain	April 2009
8	Finland	Sirkku Wilkman	April 2009
9	France	Tatiana Eremenko and Xavier Thierry	April 2009
10	Germany	Mario Peucker and Stefanie Reiter	June 2009 (updated December 2009)
11	Greece	Martin Baldwin-Edwards	May 2010
12	Hungary	Éva Gárdos	February 2010
13	Ireland	Ann Singleton and Audrey Lenoel	April 2010
14	Italy	Domenico Gabrielli, Salvatore Strozza and Enrico Todisco	April 2009
15	Latvia	Rita Zukauskiene	June 2009
16	Lithuania	Rita Zukauskiene	June 2009
17	Luxembourg	Quentin Schoonvaere and Nicolas Perrin	April 2009
18	Malta	Albert Kraler and David Reichel	April 2009
19	Norway	Vebjørn Aalandslid and Lars Østby	April 2009
20	Poland	Dorota Kupiszewska	May 2009
21	Portugal	Maria Lucinda Fonseca, Alina Esteves, Dora Possidónio and Jennifer McGarrigle	April 2009
22	Romania	Anne Herm	February 2010
23	Slovakia	Mária Katerinková, Danuša Jurčová and Ferenc Csatari	March 2010
24	Slovenia	David Reichel	April 2009
25	Spain	Amparo González-Ferrer	June 2009
26	Sweden	Mirjam Hagström	April 2009
27	Switzerland	Marco Pecoraro	April 2009
28	The Netherlands	Jeroen Doomernik	August 2009 (updated February 2010)
29	United Kingdom	Audrey Lenoël, Ann Singleton, Olga Gora and Lynnmarie Sardinha	January 2010

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