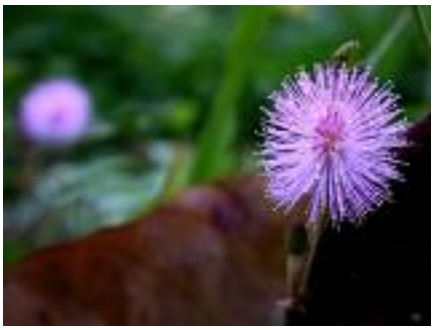

Project 2006/S 100-106607/EN, LOT 2

Modelling of statistical data on migration and migrant populations

MIMOSA

Estimation of population stocks by country of birth, sex and age for 1st January 2002–2007

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1. Introduction

The aim of the current part of the MIMOSA project was to apply the methodology proposed in Kupiszewska and Bijak (2008) to the estimation of population stocks by sex, age and country of birth for the period from 1 January 2002 to 1 January 2007. The study covers 31 European countries, of which 27 belong to the European Union (as of 1st January 2007), and further four – to EFTA (Iceland, Liechtenstein, Norway and Switzerland). The period of interest is 2002–2007. The three country of birth groups considered in the estimations are: native born (N) (born in the country of residence), born abroad in another Member State (EU or EU27), and born in a non-EU country (nEU or non-EU27), where EU refers to 27 countries (composition of the Union as of 1 January 2007). The age disaggregation is by five-year age group, up to the last, open age group of 85 years or more. The current report aims at describing the data sources and methods ultimately used in the calculations, thus providing necessary background information about the obtained estimates.

With respect to the originally proposed estimation methods, reference is made to Kupiszewska and Bijak (2008). The key difference between that report and the current report is that in several instances, application of methods originally proposed proved either not optimal. Therefore, as some changes in the methodology were made during the implementation phase of the project, the current report summarises the ultimate solutions applied for individual countries.

The original sources of data underlying the proposed calculations are described in more detail in Kupiszewska and Bijak (2008) and Kupiszewska and Wiśniowski (2009). Also in this case, whenever new data sources have been identified during the implementation phase, they are indicated in appropriate country-specific sections of the current report. While in Kupiszewska and Bijak (2008) the tables concerning data represented data availability/non-availability for each year, in the current report the tables present the data used for making the estimates for each year. These data were chiefly taken from the Eurostat database (DEMO for totals by age and sex, Joint Questionnaire on International Migration tables for the structure by country of birth, sex and age), supplemented by additional information from respective National Statistical Institutes (the websites, or received by email after contacting the NSI).

The structure of the report is as follows. After the current introduction, Section 2 contains a detailed overview of data sources and methods ultimately applied for the estimation of population stocks by country of birth, sex and age in individual countries. Whenever necessary, reference is made to the methodology proposed in Kupiszewska and Bijak (2008). The procedures are summarised in a tabular form in Section 3.

Throughout the report, the abbreviation ‘NSI’ is used to denote the National Statistical Institute of a respective country, ‘JMQ’ stands for the Joint Questionnaire on International Migration Statistics (Joint Migration Questionnaire) of Eurostat, UN Statistical Division (UNSD), UN Economic Commission for Europe (UNECE), the Council of Europe and International Labour Office (ILO). The JMQs for various years are referred to through the year in which they were collected, so for example JMQ2006 refers to the data collection conducted in 2006, requesting population stock data for 1 January 2006 and flow data for 2005.

2. Overview of methods applied for particular countries

The current section offers an overview of methods and data sources used for the estimation of population stocks by sex, age and country of birth group for 31 European countries. The outline is the result of the verification of the methodology suggested in Kupiszewska and Bijak (2008) and presents only these options, which have been ultimately applied in the calculations, together with other issues that came out during the implementation phase. A more detailed description of particular methods and data sources mentioned in this section may be found in Kupiszewska and Bijak (2008) and Kupiszewska and Wiśniowski (2009).

Countries of the European Union are presented in alphabetic order, followed by four EFTA countries (Iceland, Liechtenstein, Norway and Switzerland). In the tables summarising the data used for the calculations, "NSI" denotes the data obtained by email after contacting the NSI, while "NSI website" refers to the data downloaded from the NSI website. In the tables summarising the estimation methods, "IPF" means "Iterative proportional fitting".

2.1 Austria

The JMQ data on population stocks by country of birth in Austria are complete only for 2007. The total population figure for 2007 in the JMQ is the same as in DEMO. For the years 2002–2006 the breakdown by country of birth is missing. The only data by country of birth, apart from those for 2007 are the data from the census conducted in 2001. The complete annual data by sex and age were downloaded from the Eurostat DEMO database.

For 2007, the available data on population by country of birth, sex and age were directly aggregated into the three country of birth groups of interest (N, EU, nEU) using the JMQ2007 data. "Other" category was distributed proportionally among "Native born", EU27 and non-EU27 categories.

The estimates for the years 2002 – 2006 were obtained using the cohort-wise interpolation of population stocks between 2001 census and 1st January 2007. The initial interpolative estimates were re-scaled to annual total population by sex and age from DEMO (for details see Kupiszewska and Bijak, 2008, Section 3.3.1, p.16-18).

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001, JMQ2007	DEMO, Census2001, JMQ2007	DEMO, Census2001, JMQ2007	DEMO, Census2001, JMQ2007	DEMO, Census2001, JMQ2007	JMQ2007
Census date		15.05.2001				

Summary of used estimations methods

Year	Method
2002 – 2006	Cohort-wise interpolation between 2001 census and 1st January 2007, re-scaled to 2002-2006 total population by sex and age from DEMO
2007	Direct aggregation from the JMQ The "Other" category distributed among the Native-born, EU27 and non-EU27 categories.

2.2 Belgium

For 2002–2006 and 2008, the aggregated data on population by country of birth (Belgium, Born abroad - EU27, Born abroad – non-EU27 and Unknown), sex and 5-year age group, prepared by Nicolas Perrin, were provided by courtesy of Nicolas Perrin and Belgian NSI. For 2007 statistics by country of birth are not available. 2007 data on population by sex and age were downloaded from DEMO.

The estimates for 2002–2006 were obtained by means of the direct aggregation from the data. According to the recommendation of the Belgian NSI, the ”Unknown” category was aggregated with the ”Born abroad – non-EU27”. For 2007, the estimates were obtained using proportional decomposition to the shares calculated from the averaged figures for 2006 and 2008.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI	NSI	NSI	NSI	NSI	DEMO
Total population by sex and age	NSI	NSI	NSI	NSI	NSI	DEMO
Population by country of birth, sex and age	NSI	NSI	NSI	NSI	NSI	NSI 2007, NSI 2008

Summary of used estimations methods

Year	Method
2007	Proportional decomposition to the shares calculated from the averaged 2006 and 2008 figures. The ”Unknown” category aggregated with ”Born abroad – non-EU27”.
2002 – 2006	Direct aggregation from the NSI data. The ”Unknown” category aggregated with ”Born abroad – non-EU27”.

2.3 Bulgaria

For Bulgaria, the annual data on population by country of birth, sex and age for 2002–2007 are not available. The data used to make the estimates were the following: population by age (5-year groups), country of birth and sex from the census of 1st March 2001 and annual data on population by age (1-year groups) and sex (both downloaded from the Eurostat database). It should be noted that the annual population numbers are prepared by the NSI using the component method, based on the initial figures from the 2001 census as well as annual statistics on vital events and internal migration. International migration is not taken into account due to the lack (or poor accessibility) of data.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6.3 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 1st March 2001 was taken as a starting point and the cohort-wise propagation method was applied. When estimating the shares of country of birth groups in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6.3 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		01.03.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 Census and the annual data on total population by sex and age from DEMO. The "Other" category distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.4 Cyprus

Data on the population of Cyprus by country of birth, sex and age requested in the JMQ have been provided for 2002 only and in fact refer to the unadjusted census results[1]. According to THESIM, no annual data on population by country of birth are available and no such data were found on the NSI website. The data used for making the estimates are thus those from the census of 1st October 2001, as well as the stocks by sex and single-year age group available from DEMO.

Considering the significant immigration to Cyprus (net migration above 20 persons per 1000 population in 2004) and taking into account that the only available information are the detailed data from the 2001 Census, we think that the reliable breakdown of total population of Cyprus by country of birth is not possible. However, some very rough estimates can be made, for example for the purpose of using them to produce rough estimates for the whole EU.

The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 1st October 2001 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to 35-100+ groups. The "Unknown" age group in the Census data was distributed proportionally to the other age groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		01.10.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 Census and the annual data on total population by sex and age from DEMO. The "Other" category distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

[1] Only basic census results (population by sex, age, residence type and district) have been adjusted for under-enumeration after the post-enumeration survey. The census covered the Government controlled area of Cyprus.

2.5 Czech Republic

For the Czech Republic, the annual data on population by country of birth, sex and age for 2002–2007 are not available. The only information for making the estimations comes from the census of 1st March 2001 and from annual data on population by single-year age group and sex, available in the DEMO database. No additional data have been identified on the NSI website.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 1st March 2001 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to 35-100+ groups. The "Unknown" age group in the Census data was distributed proportionally to the other age groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		01.03.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 Census and the annual data on total population by sex and age from DEMO. The "Other" category distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.6 Denmark

The JMQ data on population stocks in Denmark for the years 2005 and 2006 are complete. The data are consistent between the JMQ and the DEMO database. The 2007 data available in the *migr_popctba* table of the Eurostat on-line database, originating from the JMQ 2007, refer in fact to year 2006. For the period 2002–2004, the JMQ tables contain complete data by country of birth and sex. The disaggregation by age was not requested by Eurostat at that time.

In order to solve the problems of missing data for 2002-2004 and 2007, and the problems with the aggregates such as "Other Europe" in the 2005-2006 Eurostat data, the complete, detailed data on men and women by country of birth and 5-year age group (up to 110+) for years 2002–2007 were downloaded from the NSI website: http://www.statbank.dk/BEF5. It was verified that the downloaded data are consistent with the data available at Eurostat.

Population by country of birth, sex and 5-year age group were obtained by means of the direct aggregation from the NSI data. The groups 85-110+ were aggregated to one group 85+. The "Unknown" category was distributed proportionally among "Native born", "Born abroad - EU27" and "Born abroad - non-EU27". The "Unknown European" were treated as "Born abroad - non-EU27" (however these were negligible numbers). Finally, the "Stateless" category was treated as "Born abroad - non-EU27".

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website
Total population by sex and age	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website
Population by country of birth, sex and age	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website

Summary of used estimations methods

Year	Method
2002 – 2007	Direct aggregation from the NSI data. The 'Unknown' category distributed proportionally among 'Native born', 'Born abroad - EU27' and 'Born abroad - non-EU27'; 'Unknown European' treated as 'Born abroad - non-EU27' (negligible numbers), 'Stateless' treated as 'Born abroad - non-EU27'.

2.7 Estonia

Annual data on population by country of birth, sex and age are not available. The data from the Census (as of 31st March 2000), and annual data on population by age ad sex were downloaded from the Eurostat database. In the Census, two sets of population figures were produced: *de facto* and *de jure* (permanent), *de facto* population excluding persons temporarily absent and including those temporarily present in the country. Disaggregations by country of birth, delivered to Eurostat, were published for the *de jure* population.

Annual population numbers (by sex and age) are prepared by the NSI using the cohort-component method, based on the figures from the 2000 census and annual vital and internal migration statistics. International migration is not taken into account due to the poor quality of data.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2000 census. The Census of 31st March 2000 was taken as a starting point and the cohort-wise propagation method was applied. The "Unknown" age group in the Census and DEMO data was distributed proportionally to the other age groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6.3 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000
Census date		31.3.2000				

Summary of used estimations methods

Year	Method
2002 – 2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 Census and the annual data on total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.8 Finland

The JMQ data on population stocks in Finland for the years 2005–2007 are complete. The data are consistent between the JMQ and the DEMO database. For the period 2002–2004, the JMQ tables contain complete data by country of birth and sex. The disaggregation by age was not requested by Eurostat at that time.

The complete data on population stock by country of birth, sex and age for years 2002–2007 were provided by courtesy of the Finnish NSI. It was verified that the obtained data are consistent with the data available at Eurostat.

The NSI data on population by country of birth, sex and age were directly aggregated into the three country of birth groups of interest (N, EU, nEU). Following the NSI advice, the "Unknown" category distributed as follows: 2/3 to "Born abroad - EU27" and 1/3 to "Born abroad - non-EU27".

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI	NSI	NSI	NSI	NSI	NSI
Total population by sex and age	NSI	NSI	NSI	NSI	NSI	NSI
Population by country of birth, sex and age	NSI	NSI	NSI	NSI	NSI	NSI

Summary of used estimations methods

Year	Method
2002 – 2007	Direct aggregation from the NSI data. The "Unknown" category distributed as follows: 2/3 to "Born abroad - EU27" and 1/3 to "Born abroad - non-EU27".

2.9 France

French data on population by country of birth, sex and age are available only from the last traditional population census (as of 8th March 1999) as well as for 2005 from the "rolling census"[2]. Both sets of data were provided by the NSI in the JMQ. Annual data on total population by sex and age were downloaded form DEMO.

Thanks to the 2005 results of the rolling census, not available to us at the time of producing Kupiszewska and Bijak (2008), a modified methodology for making the estimates has been proposed, leading to more reliable estimates.

The estimates for years 2002 – 2004 were obtained by the cohort-wise interpolation of population stocks between the 1999 Census and 1st January 2005 estimates (for details of the cohort wise interpolation see Kupiszewska and Bijak, 2008, Section 3.3.1, p.16-18). For 2005, the total population by sex and 5-year age group was distributed by country of birth group using the shares observed in the 2005 results of the "rolling census". The 2006–2007 estimates were obtained using period wise (for age groups below 35) and cohort-wise (for age groups above 35) shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the 2005 shares of country of birth groups and total 2006-2007 population from DEMO.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census1999, Census2005	DEMO, Census1999, Census2005	DEMO, Census1999, Census2005	DEMO, Census2005	DEMO, Census2005	DEMO, Census2005
Census date		08.03.1999				

Summary of used estimations methods

Year	Method
2002 – 2004	Cohort-wise interpolation of population stocks between 1999 Census and 1st January 2005 estimates, re-scaled to 2002-2004 total population by sex and age from DEMO.
2005	Proportional decomposition of total population from DEMO into country of birth groups using the shares from the 2005 results of the "rolling census"
2006 – 2007	Period-wise and cohort-wise shares propagation method based on the 2005 shares of country of birth groups and 2006-2007 data on total population by sex and age from DEMO

[2] The „rolling census" was introduced in 2004. Each cycle needed to produce final estimates lasts 5-years (the first one: 2004-2008).

2.10 Germany

No data on the breakdown of total population by country of birth have been identified, either in the JMQ or on the NSI website. The most recent census was in 1987, so census data were not appropriate as a basis for making direct estimates for 2002–2007.

Information on the country of birth is collected in the Central Register of Foreigners (*Ausländerzentralregister,* AZR). Statistics on foreigners by country of birth based on the register of foreigners are not published in the Destatis database, but some data on the number of foreigners born in Germany and born abroad can be found in other places in the internet. In particular, the following data have been identified:
31.12.2002: http://www.einbuergern.de/Pressespiegel/stat_ausl_bev.htm
31.12.2004: http://www.migration-asyl.de/public1/aufr/home.nsf/url/AF37E55EBD7314B0C125703B002CB1A4?OpenDocument
More complete data on the number of native born and foreign born foreigners and their composition by broad age group for 2004-2007 were taken from the publications *Bevölkerung und Erwerbstätigkeit. Ausländische Bevölkerung. Ergebnisse des Ausländerzentralregisters* (2005, 2006, 2007). The broad age groups for which the data relevant for MIMOSA were published were different for various years. For 2004: <18, 18-35, 35-50, 50-65, 65+. For 2005: <18, 18-35, 35-50, 50+. For 2006 and 2007: <6, 6-10, 10-15, 15-18, 18-21, 21-25, 25+. No sex specific information on the composition of foreigners by country of birth was available.

The data on the Nationals in 2005 and 2006 were obtained from the results of the Microcensus 2005 and 2006 published in the German NSI report *Bevölkerung und Erwerbstätigkeit. Bevölkerung mit Migrationshintergrund – Ergebnisse des Mikrozensus 2006* (2008). The data were downloaded from the https://www-ec.destatis.de webpage. The data included information on the number of nationals born abroad by sex and age (5-year age groups up to 24 and 10-year age groups starting from 25).

When making the estimates, it was taken into account that annual data on foreigners come from two different sources. The component method (*Bevölkerungsfortschreibung*), based on the last traditional German census of 25th May 1987[3], is used to produce annual figures on total population, total nationals and total foreigners, as well as nationals and foreigners by sex and age. Central Register on Foreigners (CFR) is used to produce disaggregation of foreigners by citizenship. The resulting total numbers and age structures of foreigners differ between both sources due to different definitions: "Generally, numbers of foreigners from the Register must be smaller than those from current population statistics because the Register covers only foreigners living in Germany not just on a temporary basis. After the register was adjusted in the period 2000 to 2004, the differences have considerably increased. It is therefore not possible to directly compare the results for the foreign population from the two sources." (*http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/EN/Content/Statistics/Bevoelkerung/Aktuell,templateId=renderPrint.psml* , accessed on 1.12.2008)

Taking into account data availability, it was decided to make the estimates for Nationals and Foreigners separately and then obtain the estimate for the total population as their sum.

For 2002–2004 the estimates for Nationals were obtained by proportional decomposition, assuming the National totals by sex and age from earlier MIMOSA calculations, and the sex and age specific structure by country of birth as in 2005. For 2005 and 2006, the structures of Nationals were obtained from the 2005 and 2006 Microcensuses data and rescaled to the Totals by sex and age taken from earlier calculations. For 2007, the structure from 2006 was assumed and applied to the number of nationals by sex and age from the JMQ 2007. Decomposition of foreign-born nationals into born in EU and born outside EU was made using the statistics concerning *Aussiedler*, based on the

[3] Data from the 1987 population census are not publicly available (sources checked: Eurostat, NSI's webpage, UNSD's Demographic Yearbook Special Census Topics).

information from the Federal Office for Migration and Refugees according to which the majority of foreign born nationals are *Aussiedler*. For further details of the estimation procedure for nationals see the Excel sheets with the calculations.

The general approach for foreigners was to use the available AZR data and rescale them to the total number of foreigners by sex and age according to *Bevölkerungsfortschreibung*. The estimates of foreigners for 2002 were prepared assuming the same structure by country of birth as estimated for 2003, and adjusting proportionally to the Foreigners by sex age from earlier MIMOSA calculations. For 2003 the Foreigners were obtained by assuming the country of birth structure of total foreigners available from the AZR data and the number of total foreigners by sex and age from earlier calculated totals, and using the IPF method. As a starting point, the 2004 estimates were used. For 2004 the number of foreigners by country of birth and age groups 18-85+ was obtained by rescaling the AZR data to the totals from earlier calculations and distributing proportionally to both sexes. The age structure for 0-17 age groups was assumed to be the same as in 2006 AZR data. For 2005 the estimates were obtained by IPF, with the numbers by country of birth based on the rescaled AZR data, total foreigners by sex an age taken from earlier calculations, and assuming 2004 estimate as a starting point. The 2006 and 2007 structures by country of birth and age for the age groups 0-24 were obtained from the rescaled AZR data, the remaining age groups were distributed according to the age structure from 2004. In all years, foreign-born foreigners were decomposed into Born in EU and Born outside EU based on the citizenship structure of foreign-born foreigners. Further details of the estimation procedure for foreigners are available in the Excel sheets with the calculations for Germany.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	D3.2 2002, 2005 estimates for nationals 2003 estimates for foreigners	D3.2 2003, 2005 estimates for nationals, AZR 2003, 2004 estimates for foreigners	D3.2 2004, 2005 estimates for nationals, AZR 2004, 2006 estimates for foreigners (0-17)	D3.2 2005, 2005 Microcensus, *Aussiedler* statistics, AZR 2005, 2004 estimates for foreigners	D3.2 2006, 2006 Microcensus, *Aussiedler* statistics, AZR 2006, 2004 estimates for foreigners 25+	JMQ 2007, 2006 estimates for nationals AZR 2007, 2004 estimates for foreigners 25+

Summary of used estimations methods

Year	Method
2002 – 2007	Aggregation of Foreigners and Nationals, for which the structures are estimated separately. Total nationals and total foreigners by sex and age taken from (*Bevölkerungsfortschreibung* data. 2005 and 2006 decomposition of nationals into born in Germany and born abroad based on Microcensus, decomposition of foreign born nationals into Born in EU and Born outside EU based on *Aussiedler* statistics. Estimation of Nationals for 2002-2004 and 2007 based on the 2005 or 2006 estimates. Structure of foreigners by country of birth obtained from AZR data (for broad age groups, grouping differing between the years, without sex). Foreign-born foreigners decomposed into Born in EU and Born outside EU based on the citizenship structure of foreign-born foreigners.

2.11 Greece

The data on population of Greece by country of birth, sex and age from the last population census of 18th March 2001, as well as the annual estimates of population by sex and 1-year age (but not by country of birth), were downloaded from the Eurostat database. No additional data have been identified.

Considering the significant immigration to Greece and taking into account that the only available information are the detailed data from the 2001 Census, the results of which are very likely not transferable forward due to the 2001 and 2006 regularisations of irregular workers (cf. Cangiano, 2008), we think that the reliable breakdown of total population of Greece by country of birth is not possible. Hence, only very rough estimation was possible.

The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 18th March 2001 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to 35-100+ groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		18.03.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 census; and 2002-2007 data on total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.12 Hungary

Data on population of Hungary by country of birth, sex and age, available from the last population census of 1st February 2001, as well as the annual estimates of population by sex and 1-year age, were downloaded from the Eurostat database. Annual data by country of birth are not available.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 1st February 2001 was taken as a starting point and the cohort-wise propagation method was applied. When estimating country of birth groups shares in the Census, the "Other" category (a very small number) was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		01.02.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 census and 2002-2007 data on total population by sex and age from DEMO. The "Other" country of birth category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.13 Ireland

The complete data on population by sex, broad group of country of birth and 5-year age group for the years 2002 (as of the 28th of April 2002) and 2006 (as of the 23rd of April 2006) from censuses were obtained by courtesy of the Irish NSI. The JMQ data on population stocks in Ireland for the period 2002–2007 are available, although very patchy. First of all, the reference date is April (possibly except 2007), and not 1st January of a given year, and the figures are universally labelled as 'provisional'. Secondly, the data are provided for selected categories of country of birth only: for persons born in the EU (EU15 for 2002–2005, EU25 for 2006, EU27 for 2007), born in Ireland, the UK and the USA. Thirdly, the figures are disaggregated only by broad age groups: 0–14, 15–24, 25–44, 45–64 and 65+ years. The data provided in the JMQ originate from the Quarterly National Household Survey (QNHS).

The data on population by sex and single-year age groups for 1st January each were downloaded from the DEMO database. The difference in the reference dates may explain the observed discrepancy between the JMQ and DEMO aggregated figures on total population for 2002-2006.

The estimates for 2002 and 2006 were obtained by applying the shares of country of birth groups from the 2002 and 2006 Censuses to the DEMO totals by sex and age.
For 2003 the estimates were prepared using the IPF algorithm with the population by age and sex taken from DEMO and with the population by country of birth and sex obtained as follows: native-born from the JMQ 2003, rescaled to DEMO, and the breakdown into EU27, NonEU27 assumed the same as in 2002. The estimates from 2002 were used as a starting point for the IPF calculations.
The 2004 estimates were produced using the IPF algorithm as well, with the data on population sex and age from DEMO. The population by country of birth and sex face of the population cube was calculated similarly as in 2003, with the native-born category taken from JMQ 2004, rescaled to DEMO, yet the EU27-NonEU27 breakdown was acquired from the interpolated (between 2003 and 2005) estimates of total males and total females born in EU27 and born outside EU27. The result of the cohort-wise interpolation between 2003 and 2005 was used as a starting point for the IPF.
For 2005 and 2007 the estimates were obtained by means of the IPF procedures for each broad age group separately assuming the population by sex and age from DEMO and the breakdown by country of birth and sex from the JMQs (for 2005 rescaled to DEMO). 2006 estimates by 5-year age group were used as starting points.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, 2002 Census	DEMO, JMQ2003, estimates for 2002	DEMO, JMQ2004, 2003 & 2005 estimates	DEMO, JMQ2005, estimates for 2006	DEMO, 2006 Census	DEMO, JMQ2007, estimates for 2006

Census date	28.04.2002
Census date	23.04.2006

Summary of used estimations methods

Year	Method
2002, 2006	Decomposition by country of birth using the shares from the 2002 and 2006 Census, respectively
2003	IPF. population by age and sex from DEMO; the population by country of birth and sex face: native-born from JMQ 2003 (rescaled to DEMO), the EU27-NonEU27 breakdown assumed the same as in 2002; starting point – the estimates for 2002.
2004	IPF. population by age and sex from DEMO; the population by country of birth and sex face: native-born from JMQ 2004 (rescaled to DEMO), the EU27-NonEU27 breakdown acquired from interpolated 2003 and 2005 estimates for total males and females; the starting point – cohort-wise interpolation between 2003 and 2005.
2005, 2007	IPF for each broad age group separately: population by age and sex from DEMO; the population by country of birth and sex face from the JMQ (rescaled to DEMO); the starting point – estimates for 2006.

2.14 Italy

For Italy, the annual data on population by country of birth, sex and age for 2002–2007 are not available. The 2001 Census data on population by country of birth, sex and 5-year age group as well as the data on total population by sex and 1-year age were downloaded from the DEMO database.

The number of foreigners born in Italy, by sex (but not by age), is available annually since 31.12.2006 (but not for earlier years) and was downloaded from the ISTAT's DEMO database: http://demo.istat.it/str2006/index_e.html. These data are based on the information from the annual survey "Movement and calculation of foreign population" (modello P.3), which is one of the surveys used by ISTAT to collect data from the Population Register offices in the Italian communities. The 2007 data on foreigners by sex and age was downloaded from the ISTAT's DEMO database: http://demo.istat.it/strasa2007/index.html.

Additional useful information is:

- the proportion of native-born foreigners in total Foreigners in the 2001 Census, published in the report "Immigrazione. Dossier Statistico 2004. XIV Rapporto sull'immigrazione" prepared by Caritas Italiana and Fondazione Migrantes: "Al censimento del 2001 la percentuale dei cittadini stranieri nati in Italia era del 12%"), as well as
- acquisitions of citizenship, published on the ISTAT website (e.g. http://demo.istat.it/str2006/)

Considering the significant immigration to Italy and taking into account that the main available information is: (i) the detailed data from the 2001 Census, so before the significant regularisation that took place in 2002 and (ii) the number of foreigners born in Italy on 1.01.2007 and the proportion of foreigners born abroad in the 2001 census, the reliable breakdown of the total population of Italy by country of birth was not possible. However, some very rough estimates of population by country of birth were made, which can be used for example for the purpose of using them to produce rough estimates for the whole EU.

The estimates for 2002–2006 were made by cohort-wise interpolation between 2001 Census and 2007 estimates, followed by an adjustment to the 2002-2006 population by sex and age from DEMO.

The estimates for 2007 were prepared using the iterative proportional fitting method (IPF). The marginal totals by sex and age were taken from DEMO while the country of birth composition was estimated using information on the number of foreigners and nationals in 2007 (NSI data), the 2007 number of foreigners born in Italy (NSI data), as well as our estimates of the distribution of nationals into native born and foreign born (the latter were prepared based on our calculations of the proportion of foreign-born nationals in all Nationals in the Census and the NSI data on the number of acquisitions of citizenship in 2002-2006). The proportion of foreign-born nationals in all Nationals in the 2001 Census was calculated using the data on population by country of birth and on population by citizenship downloaded from the Eurostat database as well as the information on the proportion of native-born foreigners in total Foreigners from the *Dossier Statistico Immigrazione 2004. XIV Rapporto Caritas-Migrantes* The decomposition of foreign-born foreigners into born in EU and born outside EU was done according to the share of EU and non-EU citizens among foreigners. As a starting point for the IPF, the numbers obtained using the cohort-wise propagated shares from the Census, adjusted to the DEMO totals by sex and age, were assumed. Further details of the estimation procedure are available in the Excel sheets with the calculations for Italy.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001, 2007 estimates	DEMO, Census2001, 2007 estimates	DEMO, Census2001, 2007 estimates	DEMO, Census2001, 2007 estimates	DEMO, Census2001, 2007 estimates	DEMO, various bits and pieces (see above), Census2001
Census date		21.10.2001				

Summary of used estimations methods

Year	Method
2002 – 2006	Cohort-wise interpolation between 2001 Census and estimates for 2007, re-scaled to 2002-2006 total population by sex and age from DEMO.
2007	Solving the puzzle on population by broad citizenship and broad country of birth for the Census and 2007. Iterative proportional fitting to the population by sex and age from DEMO and population by country of birth from the puzzle assuming the joint distribution by country of birth, sex and age from the Census as the starting point.

2.15 Latvia

The JMQ data on population stocks by country of birth in Latvia for 2007 are complete. The data are consistent between the JMQ and the DEMO database. For the period 2003–2006, the JMQ tables contain complete data by country of birth and sex, but not by age. For 2002, data by country of birth were not provided. Complete data by country of birth, sex and age from the census of 31st March 2000 were downloaded from the Eurostat database together with the annual data by sex and single-year age group. No additional data have been identified on the NSI website.

Latvian data on population stock by country of birth, sex and age for 2007 were directly aggregated. The "Unknown" category was distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27.

For the 2003–2006, the cohort-wise interpolation method based on the data from the Census and the JMQ 2007 data was used in order to obtain an initial estimate of the population structure by country of birth, sex and age. It was followed by the iterative proportional fitting (IPF) procedure, with two faces of population cube being known: the population by country of birth and sex face (from the JMQ) and population by sex and age face (from DEMO, aggregated into 5-year groups).

For 2002 the cohort wise interpolation method based on the data from the Census and the JMQ 2007 data was applied in order to obtain the starting point for the IPF. The population by sex and age face was taken from the DEMO (aggregated into 5-year groups) and the population by country of birth and sex face was the result of the interpolation of totals between Census and the 2003 JMQ data.

The "Unknown"/"Other" categories in the 2007 and Census data were distributed proportionally between Native born, Born abroad - EU27 and Born abroad - non-EU27. The "Unknown" age group in the Census was distributed proportionally to all age groups.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	JMQ2003	JMQ2004	JMQ2005	JMQ2006	JMQ2007
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	JMQ2007
Population by country of birth, sex and age	DEMO, Census2000, JMQ2003, JMQ2007	DEMO, JMQ2003, Census2000, JMQ2007	DEMO, JMQ2004, Census2000, JMQ2007	DEMO, JMQ2005, Census2000, JMQ2007	DEMO, JMQ2006, Census2000, JMQ2007	JMQ2007

Census date	31.03.2000

Summary of used estimations methods

Year	Method
2002	Iterative proportional fitting (IPF) procedure with the cohort-wise interpolation between the 2001 Census and JMQ2005 data as a starting point, fitted to the population totals by country of birth and sex interpolated between Census and JMQ2003 and the total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27
2003 – 2006	Iterative proportional fitting (IPF) procedure with the cohort-wise interpolation as a starting point, fitted to the population by country of birth and sex from the JMQs for the respective years and population by sex and age from DEMO.
2007	Direct aggregation. “Unknown” category" distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27.

2.16 Lithuania

The data on population stocks by country of birth, sex and age in Lithuania for 2005–2007 come from the JMQs. The data are consistent with the DEMO database. For 2004, the JMQ table contains complete data by country of birth and sex (the disaggregation by age was not requested by Eurostat at that time). For 2002 and 2003, data by country of birth were not provided. Complete data from the Census of 6th April 2001 by country of birth, sex and age were downloaded from the Eurostat database together with the annual data by sex and 1-year age group. The disaggregation of the Census data in the category "Unknown" (by age and sex) into "Unknown" and "Unknown foreign-born" (by age and sex) were provided by courtesy of the Lithuanian NSI.

Lithuanian data on population stock by country of birth, sex and age for 2005–2007 were directly aggregated. The "Unknown" category was distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27.

For the 2004 the cohort-wise interpolation method based on the data from the Census and the JMQ 2005 data was used in order to obtain an initial estimate of the population structure by country of birth, sex and age. It was followed by the iterative proportional fitting (IPF) procedure, with two faces of population cube being known: the population by country of birth and sex face (from the JMQ) and population by sex and age face (from DEMO, aggregated into 5-year groups).

For 2002 and 2003 the cohort-wise interpolation method based on the data from the Census and the JMQ 2005 data was applied in order to obtain the starting point for the IPF. The population by sex and age face was taken from DEMO (aggregated into 5-year groups) and the population by country of birth and sex face was the result of the interpolation of totals between the Census and the 2004 JMQ data. The "Unknown" category was distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27 while the "Unknown – foreign born" was distributed among born abroad - EU27 and born abroad - non-EU27. The "Unknown" age group in the Census was distributed proportionally among the other age groups.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	JMQ2004	JMQ2005	JMQ2006	JMQ2007
Total population by sex and age	DEMO	DEMO	DEMO	JMQ2005	JMQ2006	JMQ2007
Population by country of birth, sex and age	DEMO, Census2001, JMQ2004, JMQ2005	DEMO, Census2001, JMQ2004, JMQ2005	DEMO, JMQ2004, Census2001, JMQ2005	JMQ2005	JMQ2006	JMQ2007

Census date	06.04.2001

Summary of used estimations methods

Year	Method
2002 – 2003	Iterative proportional fitting (IPF) procedure with the cohort-wise interpolation between the Census and JMQ2005 data as a starting point, fitted to the population totals by country of birth and sex estimated using the shares from the interpolation between Census and JMQ2004 and population by sex and age from DEMO. The "Unknown" category distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27; "Unknown – foreign born" distributed among born abroad - EU27 and born abroad - non-EU27.
2004	Iterative proportional fitting (IPF) procedure with the cohort-wise interpolation between the Census and JMQ2005 data as a starting point; fitted to the population by country of birth and sex from JMQ2005 and population by sex and age from DEMO
2005 – 2007	Direct aggregation; "Unknown" category" distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27.

2.17 Luxembourg

Data on population of Luxembourg by country of birth, sex and age, available in the last population Census of 15th February 2001, as well as the annual estimates of population by sex and 1-year age, were downloaded from the Eurostat database. Annual data by country of birth are not available.

It should be noted, that the NSI has recently revised its population figures. The data on total population and population by citizenship previously provided in the JMQ are not consistent with the revised figures and with the data available from DEMO.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 15th February 2001 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to 35-100+ groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		15.02.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 census and the annual data on total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

2.18 Malta

For Malta, there are no annual data on population by country of birth, sex and age. Information about country of birth was collected during the censuses conducted in November 1995 and November 2005. The results of the censuses were provided by courtesy of the Maltese NSI. The data contained the population by sex, 5-year age group and country of birth. The country of birth categories included EU27 for 2005, and UK, France, Germany, Italy and "Other EU" for 1995. The annual data on population by sex and age were downloaded from DEMO.

The estimates for 2002 – 2005 were obtained by means of the cohort-wise interpolation between the 1995 Census and the estimations for 2006. The 2006 figures were obtained assuming the structure from the 2005Census, the estimates for 2007 were obtained by cohort-wise propagation of the 2005 Census. In the 1995 Census the categories of country of birth "Other EU" summed with UK, France, Germany and Italy were assumed to represent the EU27.
For 1 January 2006, the estimates were prepared using the data on total population from DEMO and the shares by country of birth from the Census.
The estimates for 2007 were obtained by cohort-wise shares propagation method (see Section 3.6.3 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2005 census and total population by sex and age from DEMO.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census1995, Census2005	DEMO, Census1995, Census2005	DEMO, Census1995, Census2005	DEMO, Census1995, Census2005	DEMO, Census2005	DEMO, Census2005

Census date	26.11.1995
Census date	27.11.2005

Summary of used estimations methods

Year	Method
2002 – 2005	Cohort-wise interpolation of population stocks between 1995 Census and 1st January 2006 estimates, re-scaled to 2002-2004 total population by sex and age from DEMO.
2006	Decomposition of total population from DEMO into country of birth groups using the shares from the 2005 Census
2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2005 census and total population by sex and age from DEMO.

2.19 Netherlands

The JMQ data on population stocks in the Netherlands for the years 2005–2007 are complete. The data are consistent with respect to the DEMO database. For the period 2002–2004, the JMQ tables contain complete data by country of birth and sex. The disaggregation by age was not requested by Eurostat at that time. Complete data on population by country of birth, sex and age (1-year groups) for 2002–2004 were provided by courtesy of the Dutch NSI. It was verified that the obtained data are consistent with the data available at Eurostat.

The calculations were performed by means of the direct aggregation. The 1-year age groups were aggregated into 5-year age groups. The category "Other countries" ("Overige landen") in the NSI data was added to Born abroad - non-EU27.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007
Total population by sex and age	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007
Population by country of birth, sex and age	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007

Summary of used estimations methods

Year	Method
2002 – 2007	Direct aggregation. "Other countries" added to the "Born abroad - non-EU27" category.

2.20 Poland

Data on population of Poland by country of birth, sex and age, available from the last population census of the 20th of May 2002, as well as the annual estimates of population by sex and age (but not by country of birth) were downloaded from the Eurostat database. It should be noted that these statistics refer to permanent residents of Poland. They do not include foreigners who stay in Poland more than a year but on a limited duration permit (temporary residence), nor exclude nationals living abroad for more than a year who keep their permanent address in Poland.

The Polish census figures include information about 602 thousand persons with unknown country of birth, of whom 18.4 thousand people known to be born abroad. A majority of the remaining 583.5 thousand people were most likely persons born in Poland, temporarily absent at the time of the Census, and enumerated from the population register (in such cases no detail information on several variables, including country of birth, was available in the Census data).

As the only information on the breakdown by country of birth is from the Census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2002 census. The Census of 20th May 2002 was taken as a starting point and then the estimates for 1st January were made. The cohort-wise shares propagation method was applied to all age groups. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

The "Unknown" age group was distributed proportionally to all age groups. When estimating country of birth groups shares in the Census, the "Other" category was first distributed into 'unknown' and 'unknown foreign-born'. Subsequently the former group ('unknown') has been further divided into Native-born, Born abroad - EU27 and Born abroad - non-EU27, while the latter ('unknown foreign-born') only into Born abroad - EU27 and Born abroad - non-EU27. In the distribution of 'unknown' and 'unknown foreign-born' by age, information on broad age groups from the CSO was used. The additional data (age structures for the two categories of 'unknown') were taken from:
http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_ludnosc_stan_i_struktura_demograficzno_spoleczna.xls
as well as Table 85 from the report "Migracje zagraniczne ludności 2002" published by the CSO.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2002	DEMO, Census2002	DEMO, Census2002	DEMO, Census2002	DEMO, Census2002	DEMO, Census2002

Census date	20.05.2002

Summary of used estimations methods

Year	Method
2002 – 2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2002 Census and total population by sex and age from DEMO.. The "Other" category in the Census divided into 'unknown' and 'unknown foreign-born'. 'Unknown' distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. 'Unknown foreign-born' distributed between Born abroad - EU27 and Born abroad - non-EU27.

2.21 Portugal

Annual data on the population of Portugal by country of birth are not available. Data on population by country of birth, sex and age from the last population census (12th March 2001), as well as the annual estimates of population by sex and 1-year age group, were downloaded from the Eurostat database.

Taking into account that the only available information are the detailed data from the 2001 Census, the results of which are very likely not transferable forward due to significant immigration and the 2001-2003 regularisation of irregular immigrants (cf. Cangiano, 2008), we think that a reliable breakdown of total population of Portugal by country of birth is not possible. Hence, only very rough estimation was possible.

The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2001 census. The Census of 12th March 2001 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to the 35-100+ groups. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001	DEMO, Census2001
Census date		12.03.2001				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2001 census and total population by sex and age from DEMO.

2.22 Romania

For Romania, the data on population stocks by country of birth, age and sex are available for the 2002 census (as of 18th March), as well as for 1st January 2006 and 2007. For 2004, the data provided in the JMQ are disaggregated by country of birth and sex but not by age. For 1st January 2002, 2003 and 2005 the breakdown by country of birth was not provided. The 2005 data available in the *migr_popctb* table (Population by country of birth and sex, accessed on 3 December 2008) in the Eurostat database refer in fact to 2006.

It is worth noting that the census data disseminated in publications and delivered to Eurostat refer to usually resident population, while another set of figures based on the census results concerns permanently resident population. The latter is used as a starting point for estimating annual population of Romania in the years following the census[4]. In DEMO, data on population stocks by sex and age for 2002–2007 are complete.

The data on population stock by country of birth, sex and age for 2006 and 2007 were directly aggregated from the JMQ tables.

For 2002–2004 the estimations took into account the observation that the numbers of foreign-born persons provided by the NSI for 1st January 2004 are identical to the respective numbers from the 2002 census. Therefore, the numbers by sex and age for the two foreign-born groups on 1st January 2002, 2003 and 2004 were assumed the same as in the 2002 Census. The sex and age specific numbers on native-born were calculated as a difference between the corresponding numbers on total population from DEMO and the above assumed numbers on foreign-born.

For 2005, the cohort-wise interpolation method (based on the 2006 data and the estimated figures for 2004) was applied to obtain an initial estimate of the population by country of birth, sex and age and adjusted to the known population figures by sex and age.

Categories “Unknown”, “Europe – other” and “Other” were treated as “Born abroad – nonEU27”.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	JMQ2006	JMQ2007
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	JMQ2006	JMQ2007
Population by country of birth, sex and age	DEMO, Census2002	DEMO, Census2002	DEMO, Census2002	DEMO, estimates for 2004, JMQ2006	JMQ2006	JMQ2007
Census date		18.03.2002				

[4] In the cohort-component method, migration data used to produce the yearly population estimates consist of immigration data on foreigners who received permanent residence status and data on permanent emigration of nationals. Immigration of nationals and emigration of foreigners are not taken into account due to the lack of data.

Summary of used estimations methods

Year	Method
2002 – 2004	The numbers by sex and age for the two foreign-born groups assumed the same as in the 2002 Census; Native-born calculated as a difference between the totals from DEMo and the estimates for foreign-born. "Unknown", "Europe – other" and "Other" treated as "Born abroad – nonEU27
2005	Cohort-wise interpolation between the estimates for 2004 and the 2006 JMQ data.
2006 – 2007	Direct aggregation of the JMQ data. "Unknown", "Europe – other" and "Other" treated as "Born abroad – nonEU27

2.23 Slovakia

In Slovakia, complete data on population by country of birth, sex and age are available from the census only (as of 26th of May 2001). Data on population by country of birth and sex but not disaggregated by age were also provided in the JMQ for 2005, however the numbers included 274 354 persons with unknown country of birth. The JMQ data on population by country of birth and sex for 2004, 2006 and 2007 concern foreigners only (no breakdown by age for 2004). Annual data on population by sex and age were downloaded from DEMO. The 2005 figure concerning total population of Slovakia published in the *migr_popctb* table of the Eurostat on-line database (accessed on 18.04.2008) is not consistent with DEMO, because it refers to the total number of foreigners only. Moreover, it refers to 2006, not 2005.

There is also a problem with the consistency of definitions: the numbers on total population by sex and age refer to permanent residents of Slovakia only, calculated using the component method departing from the population census. Data on foreigners come from the register of foreigners and refer to foreigners with long-term residence permits (temporary or permanent).

Due to the above mentioned data inconsistencies only rough estimation was possible. For 2002–2003 the cohort-wise interpolation between the 2001 Census and the estimates for 2004 was applied. When estimating country of birth groups shares in the Census, "Unknown" category was distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27. The "Unknown" age was distributed to the other age groups.

For 2004 the estimates were obtained by adding up the estimates for Nationals and Foreigners by country of birth, sex and age. Foreigners by country of birth, sex and age were estimated using the IPF method assuming the number of foreigners by country of birth and sex as well as the number of foreigners by sex and age as in the JMQ 2004, and taking the estimated age structure of Foreigners from 2005 as a starting point. Nationals by age and sex were obtained as a difference between Totals from DEMO and Foreigners from the JMQ, and then the decomposition of Nationals by country of birth was performed using the shares as estimated for 2005.

For 2005 the estimates for Totals (i.e. Nationals and Foreigners together) were obtained by applying the IPF, assuming the population by country of birth and sex from the JMQ 2005, population by sex and age from DEMO, and taking the 2001 Census structure (cohort-wise propagated) as a starting point. Foreigners were obtained using IPF, assuming the number of foreigners by sex and age from the JMQ 2005 and Foreigners by country of birth and sex calculated using the average shares from 2004 and 2006, with the 2006 JMQ data as a starting point. Nationals were calculated as a difference. "Unknown" and "Other" categories were distributed between Native born, born abroad - EU27 and born abroad - non-EU27 proportionally, for Totals and Foreigners separately.

Estimates for 2006 and 2007 were obtained by adding up the estimates for Nationals and Foreigners. Foreigners were taken directly from the JMQs. Nationals by sex and age were obtained as a difference between Totals from DEMO and Foreigners from the JMQ, and then decomposed by country of birth assuming the shares (sex and age specific) as in the 2005 estimates for Nationals. Again, the "Unknown" and "Other" categories (appearing in Foreigners) were distributed between Native born, born abroad - EU27 and born abroad - non-EU27 proportionally.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO, JMQ2005	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2001, estimates for 2004	DEMO, Census2001, estimates for 2004	DEMO, JMQ2004(F), estimates for 2005	DEMO, JMQ2005, Census 2001, JMQ2004, JMQ2006	DEMO, JMQ2006(F), estimates for 2005	DEMO, JMQ2007(F), estimates for 2005

(F) – data provided for Foreigners only;

Census date	26.05.2001

Summary of used estimations methods

Year	Method
2002 – 2003	Cohort-wise interpolation between the 2001 Census and 2004 estimates, re-scaled to 2002-2003 total population by sex and age from DEMO; "Unknown" distributed proportionally between Native born, born abroad - EU27 and born abroad - non-EU27;
2004	Adding up Nationals and Foreigners (by country of birth, sex and age). Nationals and Foreigners estimated separately. Foreigners: IPF using marginal totals from the JMQ , and the detailed structure from the IPF estimates for 2005 as a starting point. Nationals by sex and age calculated as a difference between total population from DEMO and Nationals. Decomposition of Nationals by country of birth based on shares estimated for 2005.
2005	IPF assuming marginal totals from the JMQ and the detailed structure from the Census (aged cohort-wise) as a starting point. IPF for Foreigners, to be used in the calculations for 2004, 2006 and 2007; assumes total foreigners by age and sex from the JMQ 2005, shares by country of birth averaged from 2004 and 2006 and 2006 JMQ data as a starting point. Nationals calculated as a difference between Total and Foreigners. "Unknown" and "Other" categories distributed between Native born, born abroad - EU27 and born abroad - non-EU27 proportionally, for Nationals and Foreigners separately.
2006 – 2007	Adding up Nationals and Foreigners (by country of birth, sex and age). Nationals and Foreigners estimated separately. Foreigners: direct aggregation from the JMQ. Nationals by age and sex calculated as a difference between Totals from DEMO and JMQ Foreigners. Decomposition of Nationals by country of birth assuming the shares estimated for 2005. "Unknown" and "Other" categories were distributed between Native born, born abroad - EU27 and born abroad - non-EU27 proportionally.

2.24 Slovenia

The JMQ data on population stocks in Slovenia for the years 2005–2007 are complete. The data are consistent between the JMQ and the DEMO database. The 2005 data available in the *migr_popctb* table of the Eurostat on-line database (accessed on 18.04.2008) refer in fact to the year 2006. For the period 2002–2004, the JMQ tables contain complete data by country of birth and sex. The disaggregation by age was not requested by Eurostat at that time. Complete data for 2002–2004 on population aggregated by country of birth groups, sex and age were provided by courtesy of the Slovenian NSI.

The numbers on population of Slovenia by broad group of country of birth, sex and 5-year age group were obtained by means of the direct aggregation. According to the recommendation of the Slovenian NSI, the "Unknown" country of birth categories were distributed as follows. For 2005-2007, the "Unknown" were distributed among two foreign-born groups. For 2002-2004, the "Unknown" category was added to "Born abroad - non-EU27". For 2003, the NSI estimates of the "Born abroad – EU27, unknown country of birth" were incorporated to the "Born abroad-EU27" category.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007
Total population by sex and age	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007
Population by country of birth, sex and age	NSI	NSI	NSI	JMQ2005	JMQ2006	JMQ2007

Summary of used estimations methods

Year	Method
2002 – 2004	Direct aggregation. "Unknown" country of birth category added to Born abroad - non-EU27. For 2003 – NSI estimates of "Unknown - Born abroad in EU27" added to the Born abroad – EU27 category.
2005 – 2007	Direct aggregation. "Unknown" category distributed proportionally among born abroad - EU27 and born abroad - non-EU27

2.25 Spain

The complete data for the period 2005–2007 were obtained from the JMQs. The 2002-2004 data on population by sex and age were downloaded from the DEMO database. These data, as well as the data in the JMQ 2005-2007, are consistent with the "Population Now-Cast" figures published on the NSI website (and considered by INE to provide the best estimates of the population). The 2002–2004 figures on population by sex and country of birth, originating from the Population Register (*Padron*) were downloaded from the NSI webpage:
http://www.ine.es/jaxi/tabla.do?path=/t20/e245/p08/l1/&file=01006.px&type=pcaxis&L=1.
These data are different from the "Population Now-Cast" numbers. The Census (as of 11th November 2001) data on population by sex, age and country of birth were obtained from the Eurostat website.

For the years 2002–2004 the estimation was accomplished by means of the cohort-wise interpolation between 2001 Census and the 2005 JMQ data followed by the IPF, with the population totals by sex and age taken from DEMO and the breakdown of Males and Females by country of birth based on the *Padron* data.

Spanish data on population stock by country of birth, sex and age for 2005–2007 did not need any estimation and they were directly aggregated into the three country of birth categories of interest.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	JMQ2005	JMQ2006	JMQ2007
Total population by sex and age	DEMO	DEMO	DEMO	JMQ2005	JMQ2006	JMQ2007
Population by country of birth, sex and age	DEMO, NSI website (Padron), Census2001, JMQ2005	DEMO, NSI website (Padron), Census2001, JMQ2005	DEMO, NSI website (Padron), Census2001, JMQ2005	JMQ2005	JMQ2006	JMQ2007
Census date		01.11.2001				

Summary of used estimations methods

Year	Method
2005 – 2007	Direct aggregation.
2002 – 2004	Cohort-wise interpolation between the 2001 Census and the 2005 JMQ data followed by the IPF, with the population totals by sex and age taken from DEMO and the breakdown of total Males and Females by country of birth based on the *Padron* data.

2.26 Sweden

The JMQ tables on population stocks in Sweden for the period 2002–2004 contain complete data by country of birth and sex, but without age For the years 2005–2007 the disaggregation by age has been provided, however the country of birth category 'Other' included both born in EU27 as well as outside the EU27 countries. Therefore, the calculations were carried out using more detailed data on foreign-born by country of birth, sex and age (1-year groups available for age 0-19 and 5-year groups for the rest) from the Swedish NSI website:
http://www.ssd.scb.se/databaser/makro/Visavar.asp?yp=tansss&xu=C9233001&huvudtabell=UtrikesFoddaR&deltabell=01&deltabellnamn=Foreign-born+persons+in+Sweden+by+country+of+birth%2C+age+and+sex.+Year&omradekod=BE&omradetext=Population&preskat=O&innehall=UtrikesFodda&starttid=2000&stopptid=2007&Prodid=BE0101&fromSok=&Fromwhere=S&lang=2&langdb=2
Data on total population by age and sex were downloaded from the DEMO database.

The numbers for the two foreign-born groups were obtained by means of direct aggregation. The 1-year age groups were aggregated into 5-year ones. The category "Native born" was calculated as a difference between the total population and the foreign-born population. The category "Unknown country of birth" in foreign-born was distributed among EU27 and non-EU27 categories.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, NSI website	DEMO, NSI website	DEMO, NSI website	DEMO, NSI website	DEMO, NSI website	DEMO, NSI website

Summary of used estimations methods

Year	Method
2002 – 2007	Direct aggregation for the two foreign-both groups. "Native born" calculated as a difference between the total population and the foreign-born. "Unknown country of birth" in Foreign-born distributed among EU27 and non-EU27 categories.

2.27 United Kingdom

The annual statistics on population by country of birth, sex and age, provided in the JMQs, are prepared using the results of the Labour Force Survey conducted in four consecutive quarters of the year. In early 2008, revised data for 2004–2006 were sent to Eurostat. The JMQ data provided for 2003 do not include the breakdown by age (age was not requested in the JMQ at that time). Moreover, the 2003 data by country of birth are not complete: data are marked as unavailable for these countries of birth for which the data were considered unreliable (due to a low number of persons born in these countries interviewed in the survey). In particular, information on the number of persons born in several EU27 countries is missing. No data were provided for 2002 and 2007.

Complete data on population by country of birth, sex and age from the population census, as of 29.04.2001, as well as the annual data on population by sex and age, were downloaded from the Eurostat database

Data on population stocks are not consistent between the sources (DEMO and LFS data) and the difference cannot be explained by the different reference dates. For example, the total population on 1 January according to DEMO was 59.4 million in 2003 and 59.7 in 2004, while the figure from the LFS given in the JMQ for 2003 was 58.4 million.

Due to the fact that it was not possible to attribute the LFS data to a specific date (the LFS data represent the whole year), only rough estimation could be prepared within MIMOSA. However, according to the information from the ONS, the ONS plans to re-calculate their estimates in future, so that they represent the population as of the 1st January each year. In the meantime, the ONS plans to provide the revised estimates for 2004-2006 to Eurostat at the end of 2008 (together with the estimates for 2007).

For 2002, the estimates (within MIMOSA) were obtained by taking an arithmetic mean of the country of birth groups shares observed in the 2001 Census and in our estimates for 2003, and applying them to the DEMO population data by sex and age.

For 2003, an iterative fitting procedure (IPF) was applied assuming population by age and sex from DEMO and sex-specific distribution by country of birth from the JMQ2003, with the JMQ 2004 data by country of birth, sex and age as a starting point.

For the years 2004–2006, the estimates were obtained by means of proportional decomposition of the data from DEMO. The sex- and age-specific shares of the country of birth groups were calculated using JMQ data for the respective year.

For 2007 the shares of the country of birth groups were assumed to be the same as in 2006 and the proportional decomposition to the DEMO data was applied.

The "Unknown" country of birth category was distributed proportionally among the three broad country of birth groups. "Other" and "Europe_other" were treated as "Born abroad - nonEU27".

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	JMQ2005, DEMO	JMQ2006, DEMO	JMQ2006, DEMO
Total population by sex and age	DEMO	DEMO	DEMO	JMQ2005	JMQ2006, DEMO	JMQ2006, DEMO
Population by country of birth, sex and age	DEMO, Census2001, JMQ2003	DEMO, JMQ2003, JMQ2004	DEMO, JMQ2004	DEMO, JMQ2005	DEMO, JMQ2006	DEMO, JMQ2006
Census date		29.04.2001				

Summary of used estimations methods

Year	Method
2002	Proportional decomposition of the DEMO data; country of birth shares calculated as a mean of the shares in the 2001 Census and the 2003 estimates "Unknown" country of birth category distributed proportionally, "Other" and "Europe_other" treated as "Born abroad - nonEU27"
2003	IPF to the population by age and sex from and population by country of birth based on the shares from the JMQ 2003. The JMQ 2004 data taken as a starting point. "Unknown" country of birth category distributed proportionally, "Other" and "Europe_other" treated as "Born abroad - nonEU27"
2004 – 2006	Proportional decomposition of the DEMO data using the country of birth shares from the respective JMQs. "Unknown" country of birth category distributed proportionally, "Other" and "Europe_other" treated as "Born abroad - nonEU27"
2007	Proportional decomposition of the DEMO data assuming the country of birth shares from the 2006. "Unknown" country of birth category distributed proportionally, "Other" and "Europe_other" treated as "Born abroad - nonEU27"

2.28 Iceland

The JMQ population stocks data by country of birth and sex for Iceland are available only for the years 2002 and 2003. The data are consistent between the JMQ and the DEMO database, however the age dimension is missing. In Iceland, censuses are not conducted since the National Registry was established in the 1950s and the information in the 2001 Census round part of the Eurostat database is register-based and concerns population stocks as of 1st January 2001.

The NSI website contains complete yearly information on the register-based population of Iceland, distributed jointly by country of birth, sex and single-year age group (1-year groups), at the following address: http://www.statice.is/Statistics/Population/Citizenship-and-country-of-birth.
The data are downloadable in the Excel, html or xml format, or as delimited text files.

The population by broad country of birth, sex and 5-year age group were obtained by means of direct aggregation. The 1-year age groups were aggregated into 5-year groups. "Foreign country not specified" were distributed among the Born abroad - EU27 and Born abroad - non-EU27 categories.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website
Total population by sex and age	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website
Population by country of birth, sex and age	NSI website	NSI website	NSI website	NSI website	NSI website	NSI website

Summary of used estimations methods

Year	Method
2002 – 2007	Direct aggregation. "Foreign country not specified" distributed among the Born abroad - EU27 and Born abroad - non-EU27 categories.

2.29 Liechtenstein

Liechtenstein did not provide the Joint Migration Questionnaire data to Eurostat. The only information for making the estimations comes from the census of the 5th December 2000 and from annual data on population by single-year age group and sex, downloaded from the DEMO database.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the cohort-wise shares propagation method (see Section 3.6.3 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2000 census. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000
Census date		5.12.2000				

Summary of used estimations methods

Year	Method
2002 – 2007	Cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2000 Census and total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27

2.30 Norway

The JMQ data on population stocks in Norway for the years 2005 – 2007 are complete. The data are consistent between the JMQ and the DEMO database. For the period 2002–2004, the JMQ tables contain complete data by country of birth and sex. The data on population by sex and age (1-year groups) were downloaded from the DEMO database. The complete data for 2002–2004 were provided by courtesy of the Norwegian NSI, however small numbers (less than 3) were suppressed. Due to the missing numbers in the tables supplied by the NSI, these tables were not used directly, but used as a starting point for the Iterative Proportional Fitting algorithm, with the population by country of birth and obtained from the JMQ and population by sex and age obtained from DEMO. "Europe (country not stated)" was treated as "Born abroad – non-EU27".

For years 2005 – 2007 the numbers were obtained by means of the direct aggregation of the JMQ tables. "Europe (country not stated)" was treated as "Born abroad – non-EU27".

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, NSI, JMQ2002	DEMO, NSI, JMQ2003	DEMO, NSI, JMQ2004	JMQ2005	JMQ2006	JMQ2007

Summary of used estimations methods

Year	Method
2002 – 2004	Iterative proportional fitting (IPF) procedure with the sex, age and country of birth aggregates calculated from the NSI tables as a starting point, fitted to the population totals by sex and country of birth from the JMQ and population by sex and age from DEMO. "Europe (country not stated)" treated as "Born abroad – non-EU27".
2005 – 2007	Direct aggregation. "Europe (country not stated)" treated as "Born abroad – non-EU27".

2.31 Switzerland

In Switzerland, the annual data on population by country of birth, sex and age for 2002–2007 are not available. The only information for making the estimations comes from the census of the 5th December 2000 and from the annual data on population by single-year age group and sex, downloaded from the Eurostat database.

As the only information on the breakdown by country of birth is from the census, only rough estimation was possible. The estimates for 1 January 2002-2007 were obtained using the shares propagation method (see Section 3.6 in Kupiszewska and Bijak, 2008), based on the shares of country of birth groups observed in the 2000 census. The Census of 5th December 2000 was taken as a starting point. The period-wise shares propagation method was applied to age groups 1-34 and the cohort-wise one to the 35-100+ groups. When estimating country of birth groups shares in the Census, the "Other" category was distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27. As described in Section 3.6 of Kupiszewska and Bijak (2008), the data on total population by sex and age from DEMO were used to re-scale the estimates in each yearly step.

Summary of data used for the estimations

Population stocks	2002	2003	2004	2005	2006	2007
Total population	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Total population by sex and age	DEMO	DEMO	DEMO	DEMO	DEMO	DEMO
Population by country of birth, sex and age	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000	DEMO, Census2000
Census date		5.12.2000				

Summary of used estimations methods

Year	Method
2002 – 2007	Period-wise and cohort-wise shares propagation method based on the shares of country of birth groups observed in the 2000 census and total population by sex and age from DEMO. The "Other" category in the Census distributed between Native-born, Born abroad - EU27 and Born abroad - non-EU27.

3. Summary

Below, a synthetic overview of the data sources and estimation methods ultimately applied for the individual countries is presented in a tabular form.

Table 5. Summary table: data and methods used for estimating population by country of birth, sex and age on 1 January 2002-2007 in 31 countries

Country	Data used	Estimation methods
Austria	JMQ2007, Census2001, DEMO	Interpolation between the Census and 2007, followed by proportional adjustment to DEMO
Belgium	NSI: 2002–2006 and 2008, DEMO	2002-2006: Direct aggregation 2007: Proportional decomposition (by country of birth) of totals from DEMO using the shares from the averaged 2006 and 2008 figures
Bulgaria	Census2001, DEMO	Shares propagation from the Census
Cyprus	Census2001, DEMO	*Shares propagation from the Census*
Czech Republic	Census2001, DEMO	Shares propagation from the Census
Denmark	NSI website	Direct aggregation
Estonia	Census2000, DEMO	Shares propagation from the Census
Finland	NSI	Direct aggregation
France	DEMO, Census1999, rolling Census 2005	2002–2004: interpolation between the 1999 Census and 2005 estimates, followed by proportional adjustment to DEMO. 2005: Proportional decomposition of DEMO totals using the shares from the rolling census. 2006–2007: Shares propagation from 2005
Germany	Microcensuses 2005, 2006 JMQ2002–2007 (by citizenship), D3.2 various AZR (Register of Foreigners) data for 2003-2007 (broad age groups), *Aussiedler* statistics	Estimations for Foreigners and Nationals separately. Nationals: rescaled Microcensuses structures. Foreigners: rescaled AZR data. Nationals and Foreigners: mixed methods, including proportional decomposition and IPF
Greece	Census2001, DEMO	*Shares propagation from the Census*
Hungary	Census2001, DEMO	Shares propagation from the Census
Ireland	Census2002, Census2006, JMQ 2005 and 2007 (broad age groups), JMQ 2003-2004 (no age) DEMO	2002, 2006: Proportional decomposition of DEMO totals using the shares from the censuses 2003, 2004: IPF to DEMO and the c.o.b shares from the JMQ 2005, 2007: IPF for each broad age group
Italy	Census2001 (by c.o. b. and by ctz), DEMO, NSI website (2007 total foreigners born in Italy, foreigners by ctz, acquisitions of citizenship 2002-2006), Caritas Italia website (share of foreigners born in Italy in the 2001 Census))	*2007: estimates separately for foreigners and Italian nationals using a combination of sources and methods* *2002–2006: interpolation between the Census and the estimates for 2007*
Latvia	JMQ2007 JMQ2003–2006 (no age), Census2000 DEMO	2007: direct aggregation. 2003–2006: interpolation between the Census and 2007, followed by IPF to the JMQ and DEMO data. 2002: interpolation of totals by c.o.b. between the Census and 2003 and adjustment to DEMO; interpolation of age structures between the Census and 2007; IPF

Note: Only rough estimates can be made in a number of countries. The estimates that might be most problematic in this respect are marked in italics.

Table 5. Summary table (continued)

Lithuania	JMQ2005-2007 JMQ 2004 (no age), Census2001, NSI (Unknown by age in the Census) DEMO	2005–2007: direct aggregation. 2004: interpolation between the Census and 2005, followed by IPF to the JMQ and DEMO data 2002–2003: interpolation of totals by c.o.b. between the Census and 2004 and adjustment to DEMO; interpolation of age structures between the Census and 2005; IPF
Luxembourg	Census2001, DEMO	Shares propagation from the Census
Malta	NSI (Census1995, Census2005), DEMO	2006–2007: shares propagation from the Census 2002–2005: interpolation between two censuses followed by proportional adjustment to DEMO
Netherlands	JMQ2005-2007 NSI:2002-2004	Direct aggregation
Poland	Census2002, NSI website (Unknown in the Census), DEMO	Shares propagation from the Census
Portugal	Census2001, DEMO	*Shares propagation from the Census*
Romania	JMQ2006-2007 JMQ2004 (no age) Census2002, DEMO	2006–2007: direct aggregation. 2005: interpolation between 2004 and 2006, followed by proportional adjustment 2002–2004: number of foreign-born as in the census and 2004 JMQ data, native-born calculated as a difference between DEMO and foreign-born
Slovakia	JMQ2006–2007 (foreigners), JMQ2005 (no age) JMQ2004 (foreigners, no age) Census2001, DEMO	2002-2003: interpolation between the 2001 Census and 2005, adjusted to DEMO. 2005: IPF to DEMO and JMQ. 2004, 2006-2007: Estimates separately for nationals and foreigners 2004: IPF for foreigners; decomposition of nationals by c.o.b using the 2005 shares 2006-2007: direct aggregation for foreigners, nationals by c.o.b using the 2005 shares
Slovenia	JMQ2005–2007, NSI: 2002–2004	2002–2007: direct aggregation
Spain	JMQ2005–2007, NSI website (*Padron*): 2002–2004 (without age), Census2001, DEMO	2005–2007: direct aggregation 2002–2004: Interpolation between Census and 2005 followed by IPF to DEMO and rescaled *Padron* data by country of birth
Sweden	DEMO, NSI website	Direct aggregation.
United Kingdom	JMQ2004–2006, JMQ2003 (broad age), Census2001, DEMO	2004–2007: proportional decomposition of DEMO totals using the shares from the JMQs 2003: IPF to DEMO and the rescaled JMQ data 2002: proportional decomposition of DEMO using the averaged shares from the Census and the 2003 estimates
Iceland	NSI website	Direct aggregation
Liechtenstein	Census2000, DEMO	Shares propagation from the Census
Norway	JMQ2005–2007 NSI: 2002-2004 (incomplete – missing small numbers), JMQ2002–2004 (no age), DEMO	2005–2007: direct aggregation 2002–2004: IPF to marginal totals from JMQs and DEMO
Switzerland	Census2001, DEMO	Shares propagation from the Census

Note: Only rough estimates can be made in a number of countries. The estimates that might be most problematic in this respect are marked in italics.

4. References

Kupiszewska, D., and Bijak, J. (2008). Methodology for the estimation of population stocks by country of birth, sex and age. Report for the MIMOSA Project. Warsaw: Central European Forum for Migration and Population Research.

Kupiszewska, D., and Wiśniowski, A. (2009). Availability of statistical data on migration and migrant population and potential supplementary sources for data estimation. Revised and updated report. Report for the MIMOSA Project. Warsaw: Central European Forum for Migration and Population Research.

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