

Integrating expert opinions and data to estimate and forecast international migration

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Abstract: Migration scenario-based projections and probabilistic forecasts are typically driven by data and / or expert opinion. Relatively few approaches integrate the two sources of information. Migration data provide evidence of ranges and variability of the phenomenon in the past and may thus be useful in assessing the unknown (current and future) levels and uncertainty of migration. However, it is well acknowledged in the literature that migration data are often inadequate, incomplete or entirely missing. Therefore, expert opinion can be used to provide information about the inadequacies of the data, plausibility of scenarios and narratives, and assessing detailed characteristics of migration. In this study, we review and evaluate the recent approaches of integrating international migration data and expert opinions that have been obtained by using a Delphi method. The method elicits and refines group judgements through iterative anonymous responses with controlled and aggregated feedback. It helps reduce bias due to an individual's dominance and allows varying opinions of experts from different fields to converge. We also present results of the Delphi study on migration composition and policies in the European Union in the next 10 years. We propose how this information can be incorporated in projecting future migration and population.

Background

Migration estimation and forecasting often relies on the existing data and expert information. The quantitative data on migration, especially flows, are often inadequate, incomparable or entirely missing (Willekens et al. 2016). Information elicited from experts can be used on its own to produce forecasts of population components, including migration, or it can be used in combination with quantitative data (see, e.g., Bijak and Wiśniowski 2010; Raymer et al. 2013; Wiśniowski et al. 2014). Delphi survey as a means to elicit expert information has gained some popularity in migration studies. A review of applications can be found in Bijak and Wiśniowski (2010) and in Acostamadiedo et al. (2020). In general, Delphi surveys have been used to: (1) establish scenarios and/or narratives about migration patterns, (2) provide information that aided forecasts of migration, and (3) recommend migration policies. A Delphi survey is particularly useful to provide information that is not available in quantitative data sources.

Delphi Survey was initially introduced by the RAND Corporation in the 1950s. Dalkey (1969) defines the Delphi method as 'a method of eliciting and refining group judgements'. Delphi has three features: the respondents are anonymous, the survey is iterative and in each iteration controlled feedback is provided, and responses are aggregated. It helps reduce bias due to an individual's dominance and achieve convergence of opinion. The Delphi method is also useful to quantify the results, in terms of point predictions, such as group median, and variability, such as quartiles of the responses. Weights to expert opinions can also be used based on, for example, the amount of change in the second and following rounds, or individual ratings of competence.

This paper presents (1) an overview of how the Delphi survey can be used to supplement migration estimation and forecasting and (2) the preliminary results of the expert Delphi survey for the purpose of the project "Future Migration Scenarios for Europe" ([FUME](#)). The aim of the survey is to assess the migration policy priorities for the next 10 years in the European Union (EU) and to learn about expected composition of migration by skills and gender. The elicited information is then used to supplement scenario narratives and migration projections used in a multiregional population projection model for the EU.

Delphi survey on EU migration policies and migration composition

Design

The Delphi survey was designed to elicit information from experts on migration policies on five topics:

- I. Drivers and motivations of immigration to the EU,
- II. Composition of migration by skill levels,
- III. Composition of migration by gender,
- IV. Policies on migration,
- V. Impacts of the Covid-19 pandemic.

Past experiences with eliciting quantitative information about the size of future migration via Delphi surveys yielded relatively large variability of the responses (e.g. Wiśniowski et al. 2014; Acostamadiedo et al. 2020). These results were achieved despite providing experts with aggregated feedback from the first round that was supposed to encourage “convergence” of opinion. Therefore, in the current survey, the aim was not to elicit the size of future migration, but rather, to focus on the qualitative assessment of the importance of migration drivers, migration decomposition and priorities for future policymaking.

The first topic elicited information on the drivers of migration in five domains, demography and education, economy, environment, governance and society. The elicited information will be used in developing theory-driven gravity-type forecasting models of migration within the EU and from various regions to the EU. The experts were asked to provide the most relevant drivers for each migration corridor, that is from six regions of the world (Europe outside the EU, Asia, Middle East and North Africa, Sub-Saharan Africa, Latin America and the Caribbean, and Northern America), to four regions of the EU (Northern, Eastern, Southern, and Western). The experts also had an opportunity to provide additional driver and specify Other sending region of the world.

The second topic included four questions: two on skilled and two on low-skilled migration. The experts were asked to specify up to three most important corridors between the EU regions, and up to three corridors from regions of the world to the EU regions, in the next 10 years. Skilled migration was defined as labour migration in high-skilled or medium-skilled jobs: IT, corporate managers, health professionals, scientists, and education; low-skilled migration was defined as labour migration in low-skilled jobs: services or trades, domestic workers, and caregivers. The output from these questions provides information on the decomposition of migration by skilled vs low-skilled migrants, as predicted by the experts.

The third topic aimed at eliciting information on the importance of the gender-oriented policies of migration and predicted gender gap of future migration. The rate of skilled male migrants is currently higher than that of female migrants. For example, during 2009-2018, the proportion of flows of male immigrants to the EU-27 member states was 54%, whereas for females it was 46% (according to the Eurostat database). However, there is gender segregation among high-skilled occupations (Kofman, 2014). For example, the IT sector is mostly composed of skilled male migrants, while skilled female migrants are concentrated in education, health, and other. Highly skilled migrant women not only have higher rates of migration than low-skilled women, but they are also more likely to migrate than highly skilled men (O’Neil, Fleury and Foresti 2016, p.9). Therefore, the survey attempts eliciting whether the gender gap will be widening or not, as well as the most important issues related to gender of migrants that will be considered by policymakers in the EU.

The fourth topic aimed to elicit priorities in migration policies in the next 10 years. Experts were asked to choose from amongst policies, such as extending the EU Blue Card system, extending an immigration quota system, providing a shortage occupation list, liberalising labour migration policies, introduction of a point-based system, supporting family-friendly migration policies, moving towards more gender-specific migration policy, and supporting work visas for higher-education international graduates. Further, they were invited to comment on the challenges of implementing selected policies and on the importance of the gender-balanced migration policy. Such policies can, for example, increase care services or skill

development opportunities to women, gender-based assessments and a labour market strategy that reduces occupational segregation and wage differences by gender.

The last topic elicited information on the expected impact of the COVID-19 pandemic in the next 10 years on economic growth in the EU. This information will be utilised in the gravity-based migration forecasting model. Also, other potential impacts of the pandemic, including those on future migration policies, were elicited. This topic has been an ad hoc addition dictated by the developing situation related to the pandemic and the uncertainty it may have on the internal and international migration in the EU.

Preliminary results

The questionnaire and selection of topics was tested amongst 12 project members and stakeholders in a pilot round carried out in January 2021. Round 1 of the planned two rounds of the Delphi survey was fielded between 1 April and 5 May 2021. A total of 45 participants were invited, out of whom 11 provided responses. One additional response was also added from the pilot round. The experts were selected based on their experience and knowledge of migration policies at the EU level. The aim was also to ensure a heterogeneity of experts' background.

A preliminary analysis of the responses based on the first round of the survey are presented below. For example, the decomposition of skilled and low-skilled migration from outside of the EU (topic II) is presented in Table 1. For the skilled migration, the two regions that together gathered more than half of the votes are non-EU Balkans and Eastern Europe (29%) and Asia (24%). The main destination, according to experts, will be Western EU with 38%, followed by Southern and Northern EU, each obtaining around a quarter of votes. For the low-skilled migration, the results are more uncertain, with the largest senders being Asia (25% of votes), non-EU Balkans and Eastern Europe (23%), Middle East and North Africa (20%) and Sub-Saharan Africa (19%). The most popular destination the experts predict in the next 10 years is Southern EU (35% of the votes) and Western EU (33%). The least popular destination, according to experts' predictions, both for skilled and low-skilled immigration, is Eastern EU.

Table 1: Distribution of experts' votes on the future decomposition of skilled (top panel) and low-skilled (lower panel) migration from the rest of the world to the EU. Note: experts were asked to choose up to three corridors (origin-destination pairs).

Origin/Destination	Eastern EU	Northern EU	Southern EU	Western EU	Total
a) Skilled migration					
Asia	3%	8%	4%	9%	24%
Balkans and Eastern Europe (non-EU)	8%	6%	7%	8%	29%
Latin America and the Caribbean	0%	1%	6%	4%	11%
Middle East and North Africa	0%	3%	3%	5%	11%
Northern America	1%	3%	1%	6%	11%
Other	1%	1%	1%	1%	4%
Sub-Saharan Africa	0%	2%	4%	5%	11%
Total	13%	24%	26%	38%	
b) Low-Skilled migration					
Asia	5%	5%	6%	8%	25%
Balkans and Eastern Europe (non-EU)	8%	4%	4%	6%	23%
Latin America and the Caribbean	0%	1%	7%	2%	10%
Middle East and North Africa	0%	4%	8%	8%	20%
Northern America	0%	0%	0%	2%	2%
Other	1%	0%	0%	0%	1%
Sub-Saharan Africa	0%	4%	9%	7%	19%
Total	14%	19%	35%	33%	

Source: preliminary results of Round 1 Delphi Survey.

In Table 2, preliminary results of the experts' opinion on how the COVID-19 pandemic will affect the migration policies in the EU countries are presented. We see the average probabilities assigned by experts to various policy scenarios (those probabilities were to sum up to 100%). While the mean probability is the largest in the case of "no direct effect on migration policies" (30%), the variability between experts is the largest in this scenario, with standard deviation being 34% and median 15%. The other plausible scenarios selected by experts are that policies will be selective towards high-skilled migrants or restrictive to all groups of migrants.

Table 2: Distribution of probabilities assigned to various policy priorities in the wake of the COVID-19 pandemic.

	No direct effect of Covid-19 on migration policies	More open migration policies	Policies selective towards high-skilled migrants	Policies selective towards low-skilled migrants	Policies restrictive to all groups of migrants	Promoting migration within the EU
mean	30	10	21	9	19	10
std.dev	34	15	18	9	13	10
median	15	5	20	9	20	10

Source: preliminary results of Round 1 Delphi Survey.

Future work

The final paper will present the final results of the Delphi survey for all topics covered after two rounds, as well as proposed methods of utilising the outputs in the migration forecasting and population projection models. The analysis will be carried out reflecting on the past attempts and results of utilising and integrating qualitative expert opinion in migration estimation and forecasting, especially by using Bayesian inference and informative prior distributions.

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