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New methodologies for including migration in demographic projections

Dr. Thomas Büttner
KNOMAD Consultant,
United Nations Population Division (i.R.)

Current practice

- Migration is estimated and treated as a residual, forcing the inclusion of it as net migration in most international population projections.
- The Vienna Group implemented an innovation using estimated flows in a migrant pool model in their global population projections (2014).

Data: Possibilities

- There exist a substantive body of work to consolidate official statistics on migration flows (emigrants, immigrants) for groups of countries (mostly Europe)*.
The results show the immense challenge to produce reliable, consistent, and detailed statistics on people moving from one country/place to another country/place. However, they are covering only a very limited part of the world.
- A global database of global migration flows has been made available by G. Abel (IIASA, VID/ÖAW), based on the comprehensive datasets of migrants stocks assembled by the UN Population Division and the World Bank.

* DEMIG (International Migration Institute and OECD), DIOG (OECD), IMEM (Southampton...MIMOSA (EUROSTAT),

Projection Models: Multiregional Possibilities

- The classic demographic multiregional model seems to be the best for performing population projections that include migration flows.
- However, the model is biased towards emigration, as it implements emigration rates only.
- The immigration side of the migrant flow dynamics is not explicitly covered.
- Both sides – emigration and immigration/admission – need to be considered simultaneously and the multiregional model needs to be amended accordingly.

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It's the interaction, stupid!

- In a recent KNOMAD paper (Muenz, Buettner 2017) we suggested using migration transfer functions that formally capture the interaction between sending and receiving countries, or regions (Inspired by mating rules or marriage functions in nuptiality analysis).

Example: Constant Emigration Rates

- Assuming only population dynamics as the driving force for emigration (**emission of migrants**), constant emigration rates as of 2005-2010 would generate a strong increase of emigrants from Africa*, and less so from other world regions.
- Europe would receive from Africa 1.3 million in 2005-2010, 3.1million in 2045-2050 and 5.6 million immigrants in 2095-2100.
- Population growth in Africa would generate a more than four-fold increase of immigrants from Africa!

* From 2.3 in 2005-2010 to 5.5 million in 2045-50 and to 9.9 million in 2095-2100.

Example: Constant Immigration Rates

- Again, assuming only population dynamics as the driving force for the **admission of migrants**, constant immigration rates as of 2005-2010 would result in significantly less immigrants in Europe from Africa,
- Immigrants to Europe from Africa would remain almost constant until 2100 (1.3 million in 2005-2010, 1.3 million in 2045-2050 and 1.4 million in 2095-2100).

Suggested Solution: Transfer function (harmonic mean)

- If one assumes interaction between countries emitting migrants and countries admitting migrants, the different demographic dynamics are considered. As an illustration, we suggested the harmonic mean as a transfer function.
- Under the interaction assumption, immigrants from Africa into Europe would increase, but to a lesser extent: From 1.3 million in 2005-2010 to 1.9 million in 2045-2050 and 2.3 million in 2095-2100

Further work: Better data and more realistic projection assumptions

- **Consider different types of migration** (permanent migration, circular labor migration, refugee movements, etc.). This would increase the analytical power of the migration projections.
- **Investigate spatial structure and patterns of migration.** This information could be used to reduce the complexity of the multiregional model, by shrinking the state space to the most important actors. Reducing complexity will also help to communicate better the main trends for the future.
- **Consider other driving forces.** We suggest linking the supply and demand of migration not just to the total population, but to segments of the population, such as the number or proportion of working-age people. Calculation of labor force replacement migration scenarios is also a promising option, as well as other factors.

Thank You!

