European economic integration

Changing demographics – future developments in Europe

MAREK KUPISZEWSKI

The presentation is based on research conducted by Jakub Bijak, Dorota Anna Kicinger, Kupiszewska, Marek Kupiszewski, Katarzyna Saczuk

Vienna, November 2008
Population and labour force forecasts

What are population forecasts?

- Forecasts reflect the demographers’ expectations as to the direction and magnitude of future changes in the size and structure of populations.
- The forecasts are based on past tendencies of various demographic phenomena (fertility, mortality, migration), as well as on the expert assumptions concerning such trends envisaged for the future.
- Usually forecasts are made in several variants, in order to reflect uncertainty about the analysed phenomena.
- **Population forecasts do not have to come true!** Their basic role is to provide information for policy decisions, which can e.g. reverse the unfavourable trends.
Case study CEFMR population forecasts and simulations

Introduction

Model

• Multi-regional model of population dynamics MULTIPOLES [Kupiszewski and Kupiszewska, 1998, 2005]

Data

• Demographic data: Eurostat and Council of Europe
• Labour force participation: ILO (Laborsta database)
• Migration modelled on two geographical levels:
  – Flows between the system of 27 countries under study (origin-destination emigration rates)
  – Net migration from other regions of the world (absolute numbers)
Assumptions: Demographic scenarios

Fertility: Target TFR values assumed for 2052
Assumptions: Demographic scenarios

Mortality: Average life expectancy assumed for 2052

- **Males**
- **Females**

![Maps showing life expectancy at birth for males and females across Europe.](image)
Assumptions: Demographic scenarios

Migration: Net migration rates estimated for 2052 (per 1,000)
Assumptions: Economic activity scenarios

Economic activity patterns assumed for 2052 (per cent)

**Males**

**Females**

Target (A) “Low-participation countries” – BE, ES, CH, FR, GR, IE, IT, LU, PT, UK
(B) “High-participation countries” – AT, DE, DK, FI, NL, NO, SE
(C) “Central-Eastern Europe” – BG, CZ, EE, HU, LT, LV, PL, RO, SI, SK

Policy option: maximum cross-country levels from 1985-2002
Population and labour force forecast, 2002–2052

Selected results for **Base, High and Low** migration assumptions

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (x1000)</th>
<th></th>
<th>Labour force resources (x1000)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
<td>2052 B</td>
<td>2052 H</td>
<td>2052 L</td>
</tr>
<tr>
<td>Austria</td>
<td>8 053</td>
<td>7 853</td>
<td>8 739</td>
<td>7 277</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>7 869</td>
<td>4 485</td>
<td>5 210</td>
<td>3 769</td>
</tr>
<tr>
<td>France</td>
<td>59 486</td>
<td>70 381</td>
<td>79 189</td>
<td>64 230</td>
</tr>
<tr>
<td>Germany</td>
<td>82 488</td>
<td>77 007</td>
<td>86 093</td>
<td>71 096</td>
</tr>
<tr>
<td>Poland</td>
<td>38 425</td>
<td>31 267</td>
<td>35 988</td>
<td>27 277</td>
</tr>
<tr>
<td>Sweden</td>
<td>8 925</td>
<td>9 993</td>
<td>11 111</td>
<td>9 173</td>
</tr>
<tr>
<td>UK</td>
<td>59 232</td>
<td>65 481</td>
<td>74 353</td>
<td>59 292</td>
</tr>
<tr>
<td>Italy</td>
<td>57 157</td>
<td>54 044</td>
<td>62 813</td>
<td>48 280</td>
</tr>
<tr>
<td>EUR-27</td>
<td>494 179</td>
<td>494 922</td>
<td>562 967</td>
<td>446 928</td>
</tr>
</tbody>
</table>
Population and labour force forecast, 2002–2052

Age structure of population and labour force in 27 countries:
Forecast for 2052 – Base, High and Low migration scenarios
Results of the forecasts

The real challenge: changes in the age structures

Example: Population and labour force in Poland, 2004 and 2054

Scenarios: Development, Stagnation and No migration
Population and labour force forecast, 2002–2052

Potential Support Ratio (PSR) in 2052: Base scenario

Potential Support Ratio (PSR) = \( \frac{\text{Pop. 15-64}}{\text{Pop. 65+}} \)

Average PSR:
in 2002: 4.18
in 2052: 1.82
Population and labour force forecast, 2002–2052
Elderly Support Ratio (ESR) in 2052: Base scenario

\[
ESR = \frac{\text{Act. 15-64}}{\text{Inact. 65+}}
\]

*Act. – economically active population;
Inact. – inactive

Average ESR:
- in 2002: 3.09
- in 2052: 1.51
Population and labour force forecast, 2002–2052

Labour Market Support Ratio (LMSR) in 2052: Base scenario

\[
\text{LMSR} = \frac{\text{Act. 15+}}{\text{Inact. 15+}}
\]

*Act.* – economically active population;
*Inact.* – inactive

Average LMSR:
in 2002: 1.30
in 2052: 0.95
Policy challenges – impact on pension systems

Simple model:

\[
\text{Contribution rate} = \frac{\text{Retirement-age population size} \times \text{Economic inactivity rate} \times \text{Average pension}}{\text{Working-age population size} \times \text{Economic activity rate} \times \text{Average wages / salary}}
\]

Given a constant contribution rate, increasing demographic burden can be compensated by an activity increase, or a relative decline of pensions. Caeteris paribus demographic change will decrease average 2054 pension in Poland to 30.4% of 2004 level.
A note on pension systems

• Bismarck introduced scheme with retirement at 65 (reduced later to 60)
• Life expectancy in Germany between 45 and 50 years
• Gap between $e(0)$ and retirement age between 20 and 10 years (say 15 on the average)
• Take it to current demographics: retirement age should be at 85 for males and 90 for females (with $e(0) = 70$ for males and 75 for females)
Is “replacement migration” a remedy?

The forecasts show that population ageing is expected to be significantly advanced by 2052.

Is the option of increasing immigration, to prevent the support ratios from declining, realistic in the long run?

Many studies, including this one, show that NO: migration would have to increase without end, similarly to the financial pyramid schemes.
Is “replacement migration” a remedy?

“Replacement migration” simulations for 2002–2052

3 variants, with non-decreasing:
- PSR
- ESR
- LMSR

Elderly Support Ratio

Labour Market Support Ratio

Population in 2002

Elderly Support Ratio

Replacement migration (thousand persons)
Alternative policy options

(a) Increase fertility

- In the long run, it is the only way to slow down the ageing of population and labour force resources,

but:

- No single policy instrument can do it – a combination of various policies is needed [Grant et al., 2004]
- Such (serious) policies are usually very expensive
- As population processes have large inertia, the results of such policies would be observed with a time delay [Lutz et al., 2003]
Alternative policy options

(b) Increase economic activity

- For Europe, this is a good mid-term (40–50 years) option, until fertility policies begin to work
- There still is an unused labour force potential in Europe, especially as compared with the US, especially with respect to the activity of women and the elderly
- Problem acknowledged at the EU level (Lisbon Strategy)

but:

- Policy instruments should be consistent with the ones aimed at increasing fertility, and enable to reconcile work (career) with family life
Migration, demography and labour market
Effectiveness of various policy options in 50 years perspective - Poland

Active Population / Inactive Pop. (15+) - Poland

<table>
<thead>
<tr>
<th>Year</th>
<th>Basic High inflow</th>
<th>High fertil</th>
<th>Fertil+ inflow activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1.5</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>2052</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Concluding remarks

- Europe is diverse with respect to demographic and labour market perspectives of particular countries
- Increasing migration alone is either insufficient, or impossible (‘replacement migration’ studies)
- The TFR increase alone, even as high as by 0.5, would not solve the ageing-related problems by 2052, but is necessary to stabilise the population structure in the longer run
- In most of the countries, there is still high potential left in increasing labour force participation
- Ideally, various policies should be combined in a coherent manner (e.g., with respect to reconciling increasing female labour participation and fertility)
- Increasing the retirement age is certainly another option (not explicitly discussed here, covered by other studies)
Thank you for your attention

m.kupisz (at) twarda.pan.pl
www.cefmr.pan.pl