



# Recent demographic trends

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# Outline

- **Recent fertility change and current fertility patterns**
- **New phenomena: low fertility, postponement, extramarital fertility**
- **Country classification based on current fertility patterns**
- **Mortality change**
- **Population ageing as primarily the outcome of fertility change**
- **Population prospects**



**In the past forty years the rate and character of fertility in Europe has changed considerably.**

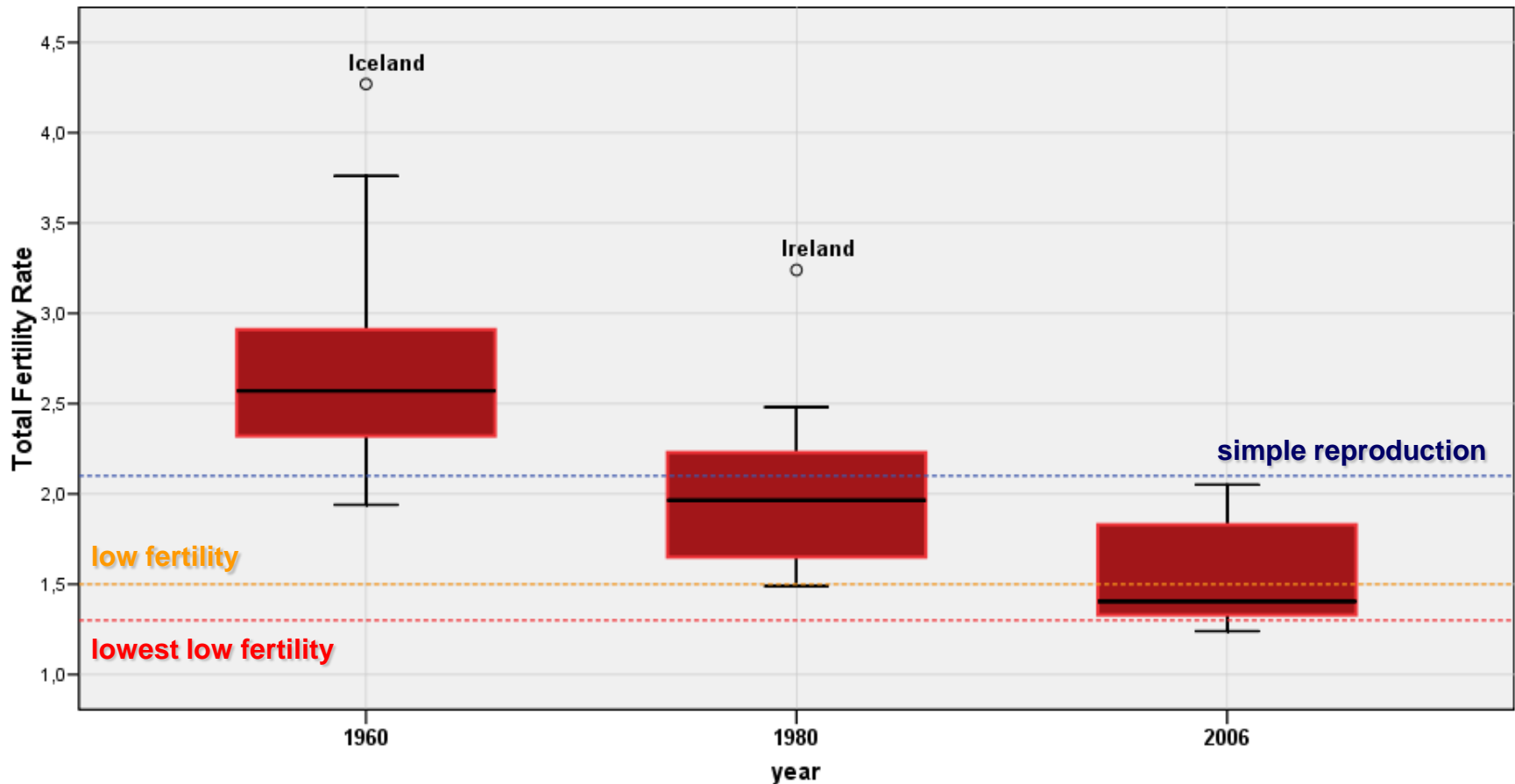
**The newly established model of fertility is historically unprecedented, as the small number of live births is insufficient to secure even simple demographic reproduction in the future.**



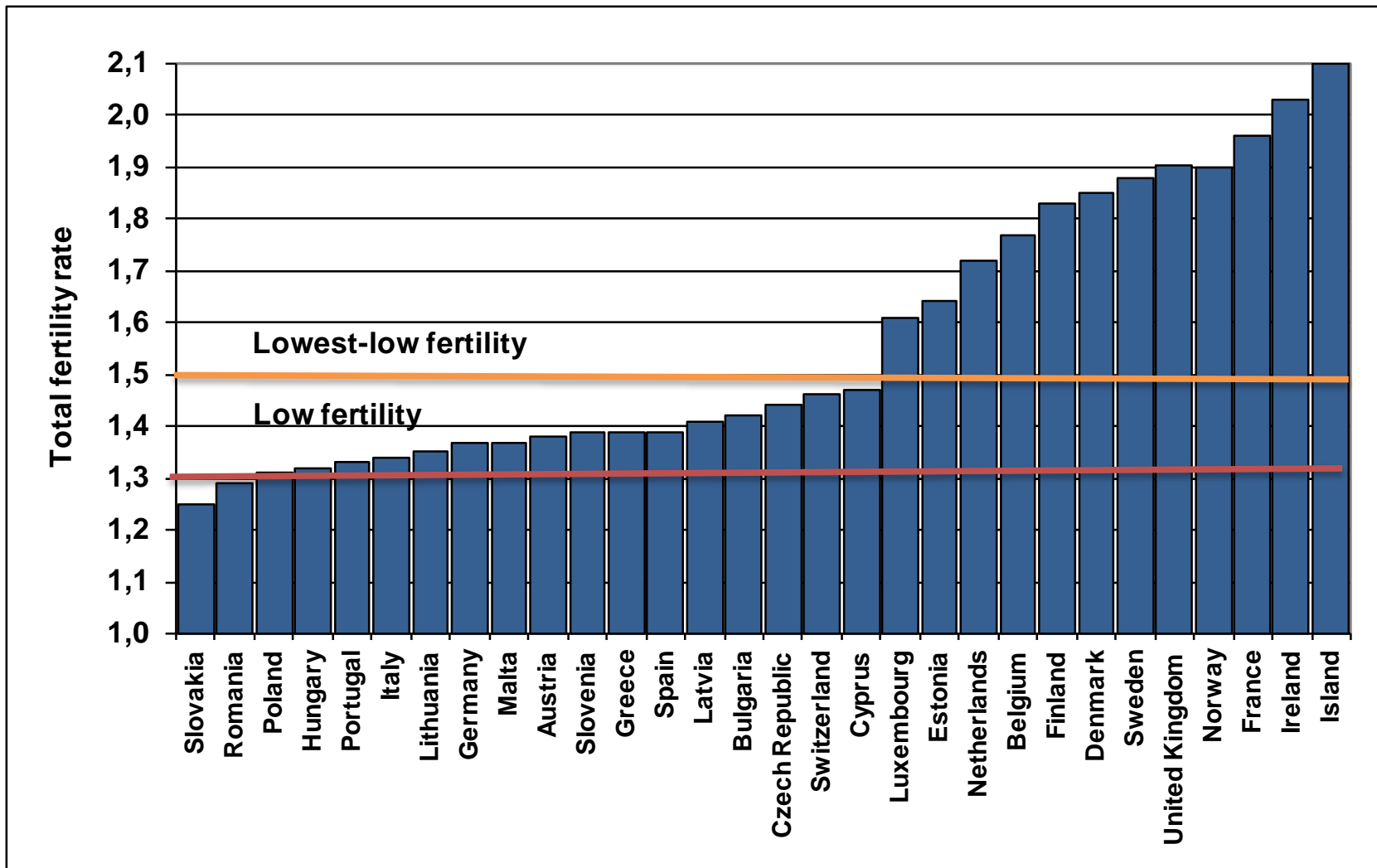
# Shift toward rare and late childbearing

- **Profound fertility decline** has occurred in Northern and Western European societies since the mid 1960s, was over by the end of the 1980s in Southern Europe, and has emerged since the beginning of the 1990s in Eastern Europe.
- **Late fertility** starts being a common widely accepted pattern.

# Variations in TFR over time in 30 European countries



# Two country groups in 2007: just below replacement level and very low fertility

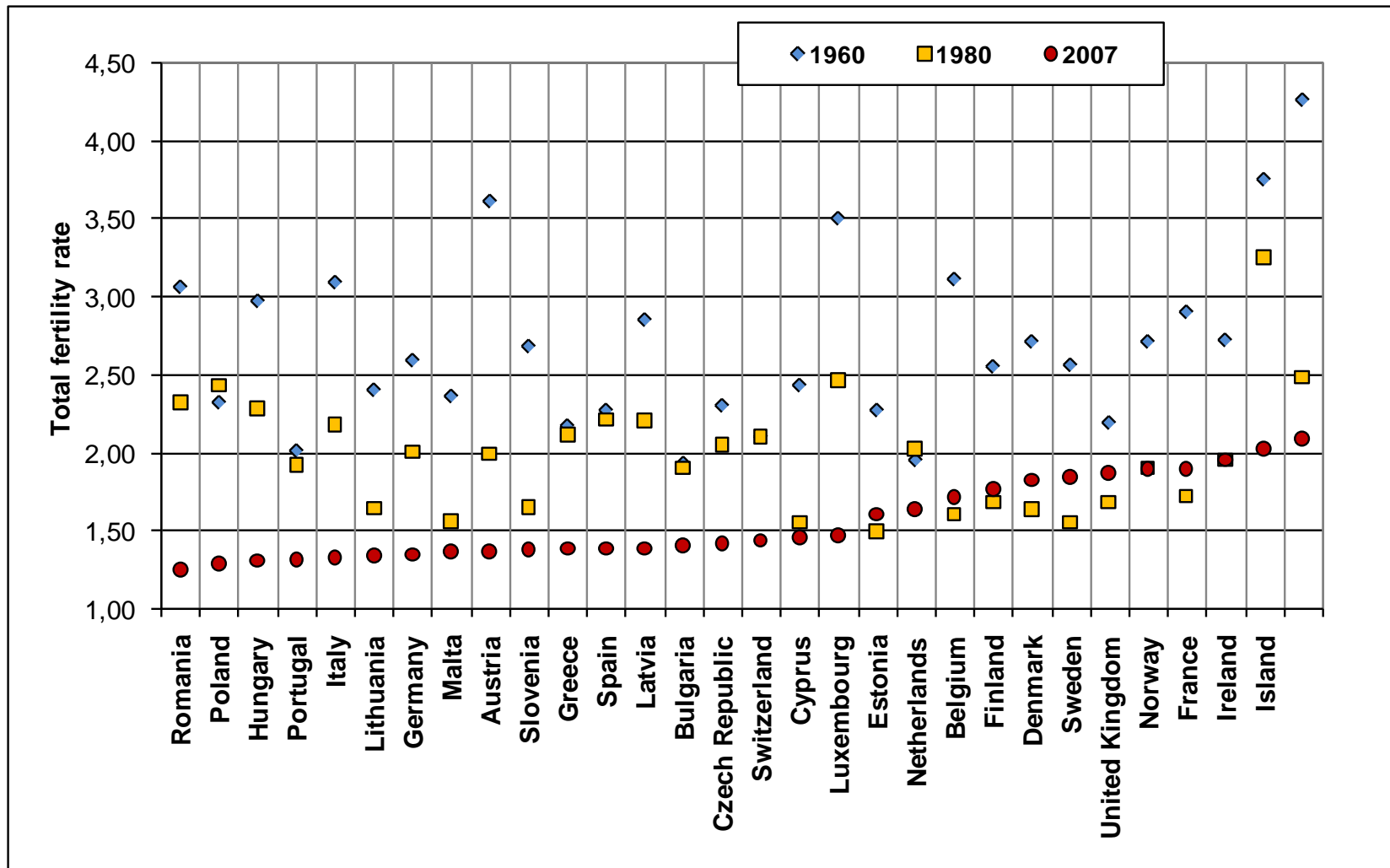




# Low fertility trap: two critical thresholds

- ⤵ **Low fertility: TFR less than 1,5**
- ⤵ **Lowest low fertility: TFR less than 1,3**
- ***P. McDonald (2005): it is much more difficult for a country to raise fertility when the total fertility rate has fallen below the critical level of 1,5 children per woman.***
- ***The situation becomes even more desperate when the lowest low fertility (below 1,3) is reached.***

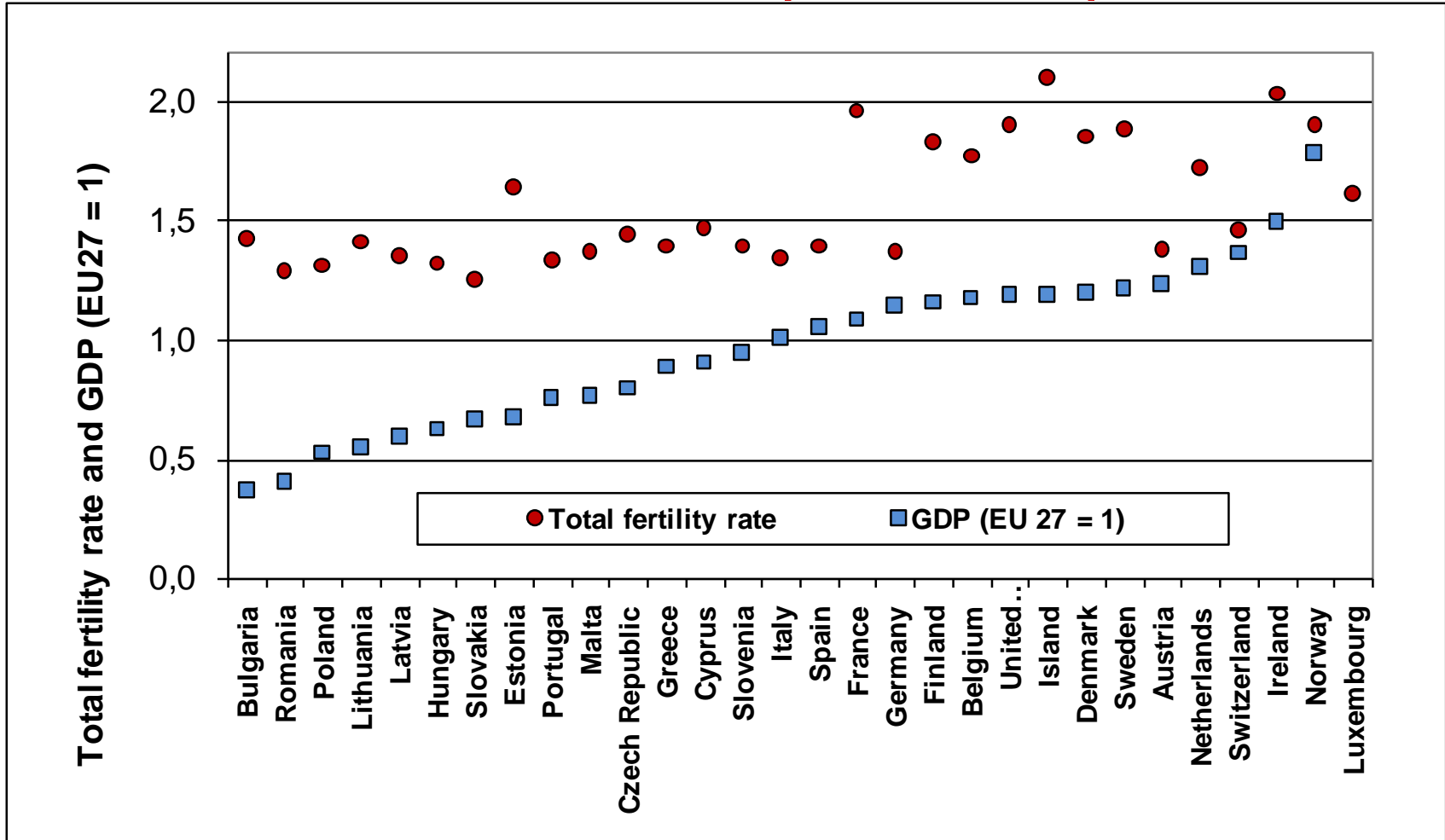
# If we look back in history it is clear that the current European fertility patterns have little to do with previous demographic development





The correlation coefficient between total fertility and relative GDP (EU27=1) was 0,513 in 2007.

This means that the richer the country within the EU, the more children it was possible to expect.

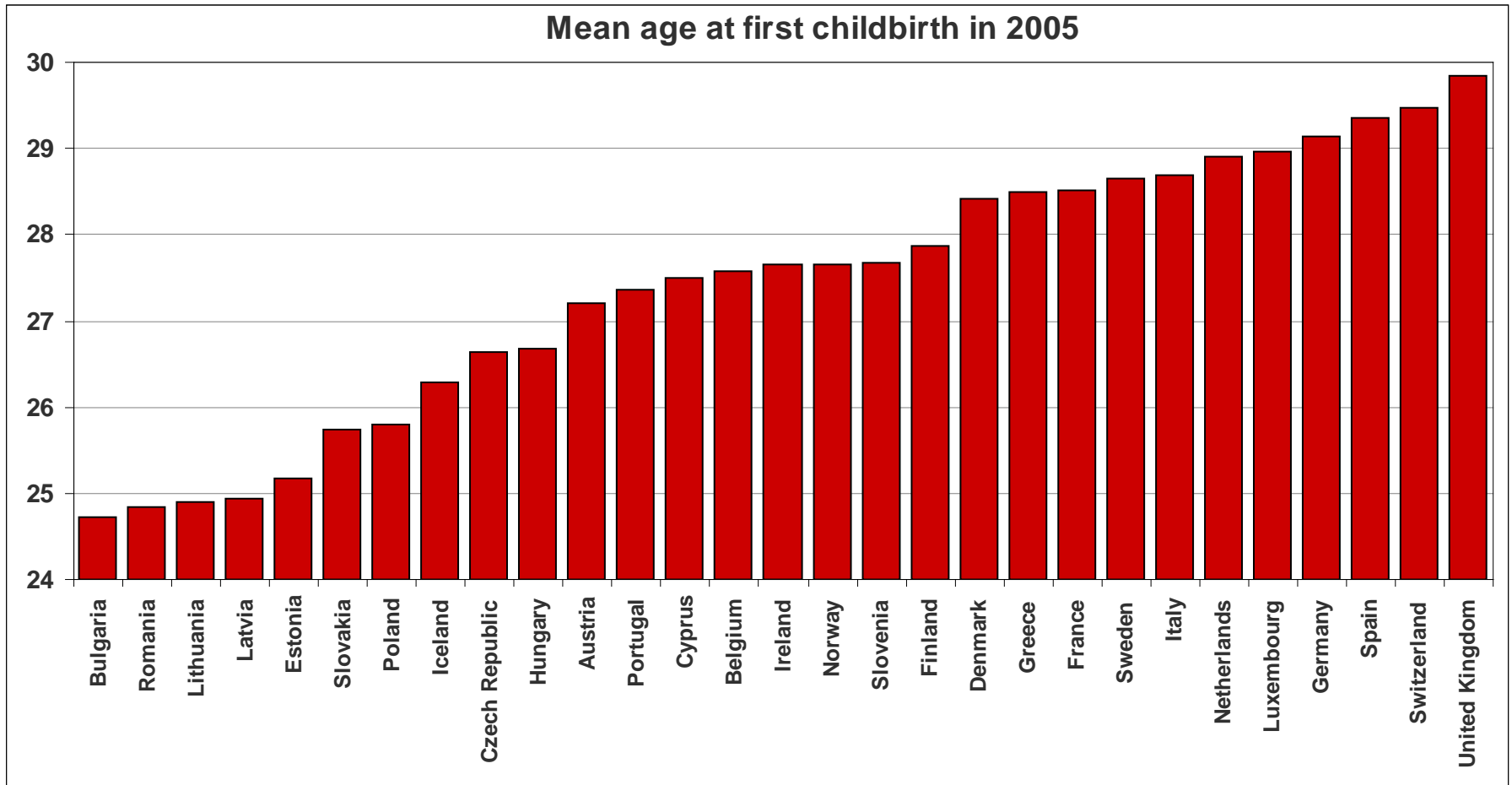


# Fertility postponement a part of a postponement transition

## *Factors behind*

- Longer education
- Building a professional career
- Reliable contraception
- ART treatment „solving“ also problems of postponed parenthood

# Younger age does not more mean a higher fertility



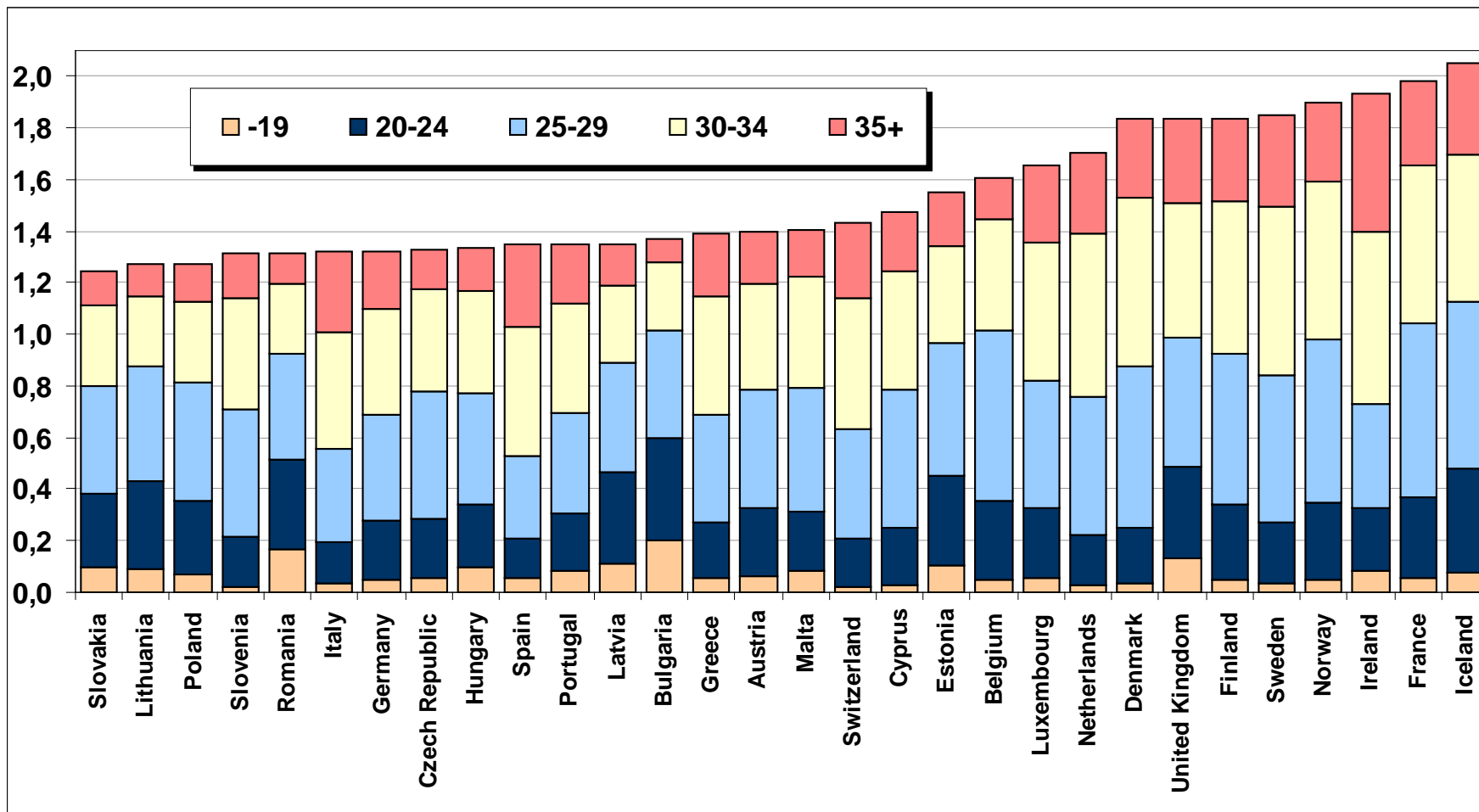


# **Late parenthood (motherhood):** miscellaneous impact on fertility levels

**North and West** of Europe: a higher age at the first childbearing does not imply low fertility levels.

**East and South** of Europe show a „negative correlation“ between an increasing age of mothers and final low fertility levels, thus confirming a classical theory as regards the relationship between age at first childbirth and final fertility rate.

# 2006: Cumulative age-specific fertility rates; (country order according to TFR)

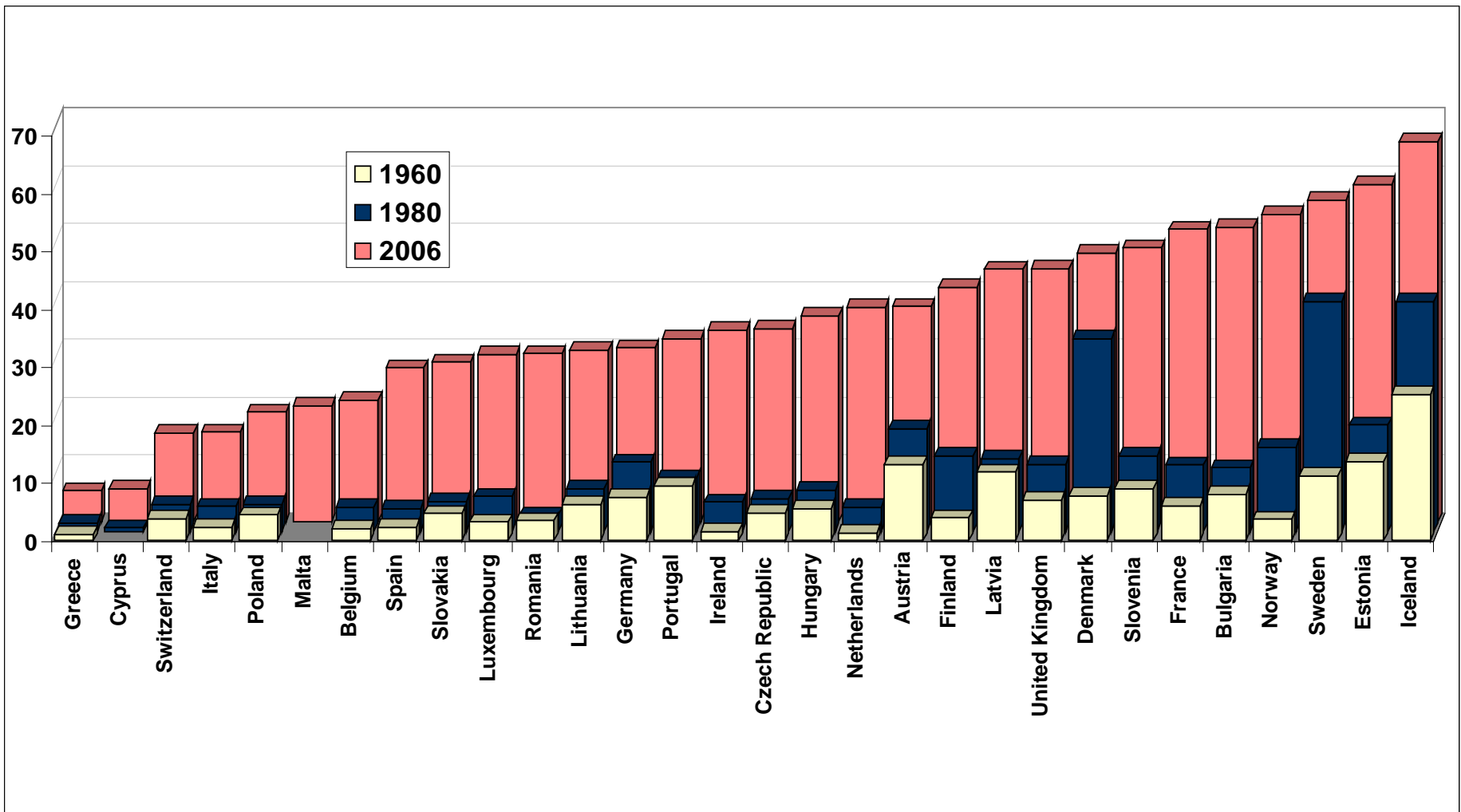




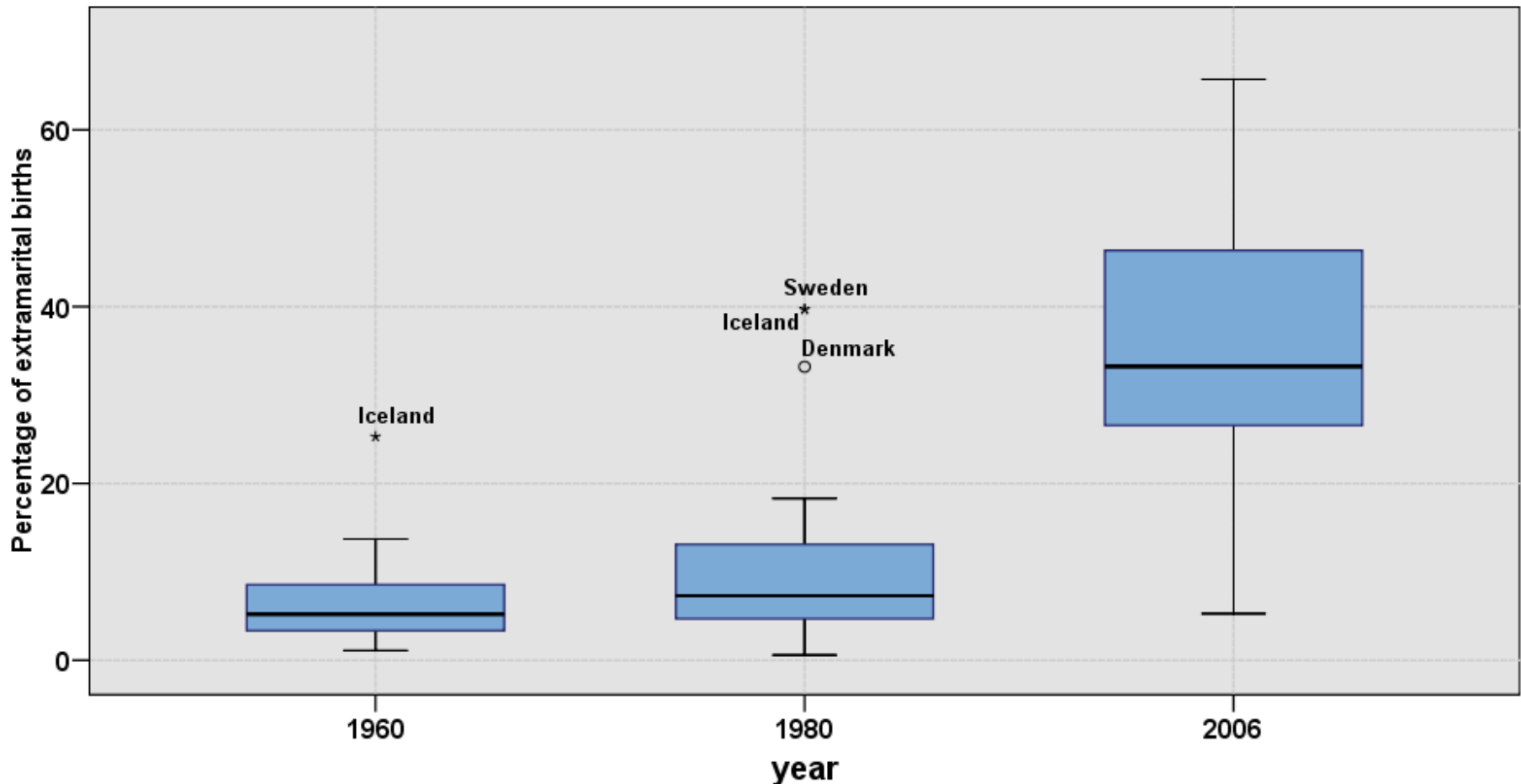
# Another new phenomenon

- **Increase in extra-marital births**
- **Accelerating in last decades**
- **Reflecting cultural settings**


# Extra-marital births per 100 births: uneven increase over time



# Variations in share of extramarital births over time in 30 European countries







**An increase of extra-marital births  
does not mean a rising cohabitation  
as an alternative to family legalized  
by marriage but more often  
means a lone motherhood**

**Countries with low nonmarital fertility ratios (Italy, Spain, Belgium) tend to have also low overall childhood exposure to single parenting.**

**Parental cohabitation accounts for much nonmarital fertility in Northern Europe.**

*P.Heuveline, J.T. Timberlake, F.F.Furstenberg: Shifting childrearing to single mothers: Results from 17 Western countries, Population and Development Review, 29, 2003, 1*

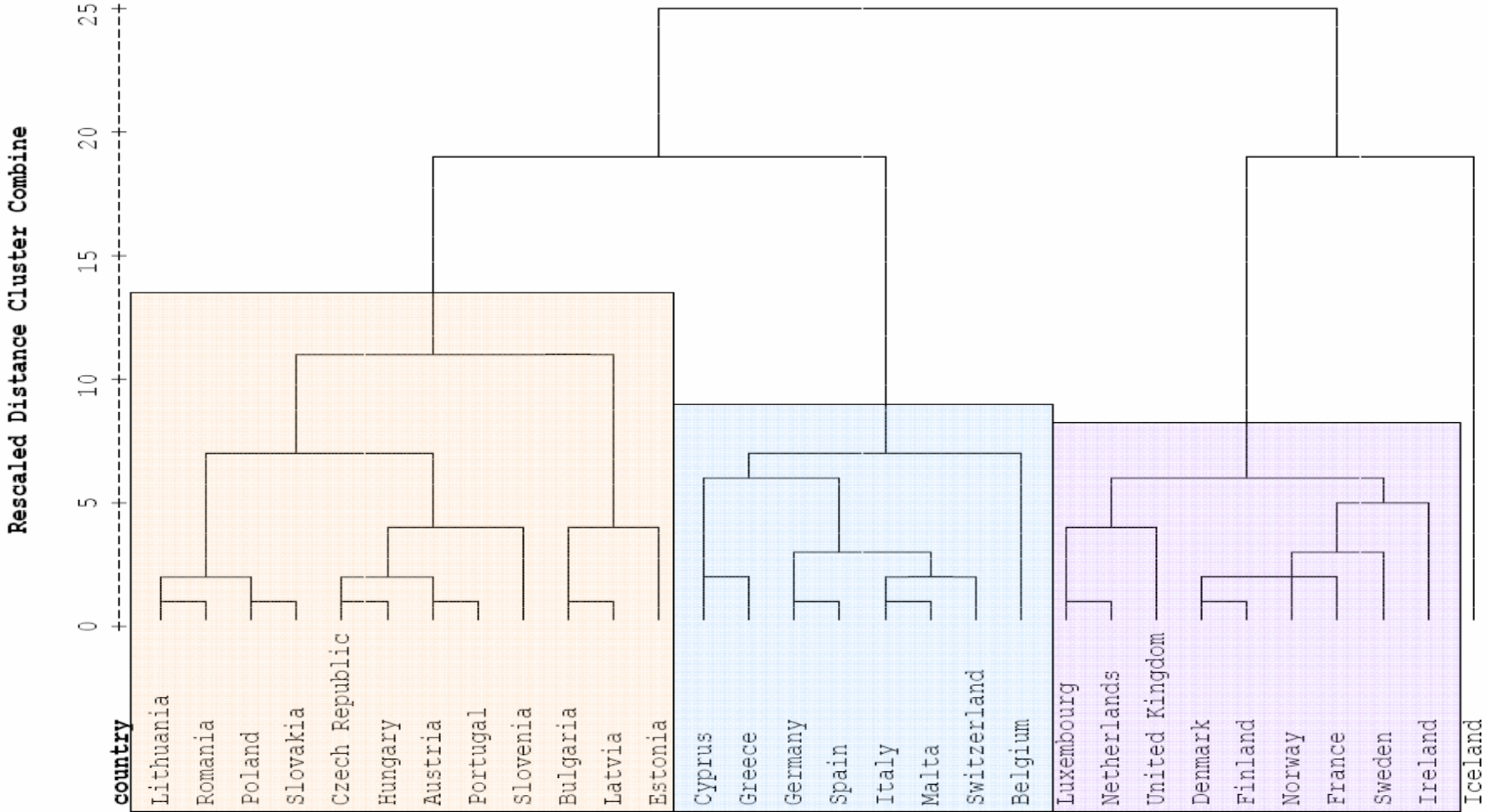


**Three most important recent changes: fertility decline, increase in mean age at first childbirth, increase in the share of extra-marital births**

**A country classification according to current levels of TFR, mean age at first childbearing, and the percentage of extramarital births.**

**Three country groups and one outlier can be delimited.**

|   | TFR         | MAB1         | Extramr      |
|---|-------------|--------------|--------------|
| Austria, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia | 1,32        | 25,97        | 36,18        |
| Belgium, Cyprus, Germany, Greece, Italy, Malta, Spain, Switzerland  | 1,40        | 28,56        | 16,92        |
| Denmark, Finland, France, Ireland, Luxembourg, Netherlands, Norway, Sweden, United Kingdom                            | 1,80        | 28,50        | 42,08        |
| Iceland   | 2,05        | 26,29        | 65,72        |
| <b>Total</b>  | <b>1,51</b> | <b>27,43</b> | <b>33,80</b> |



# Cluster characteristics show puzzled fertility patterns

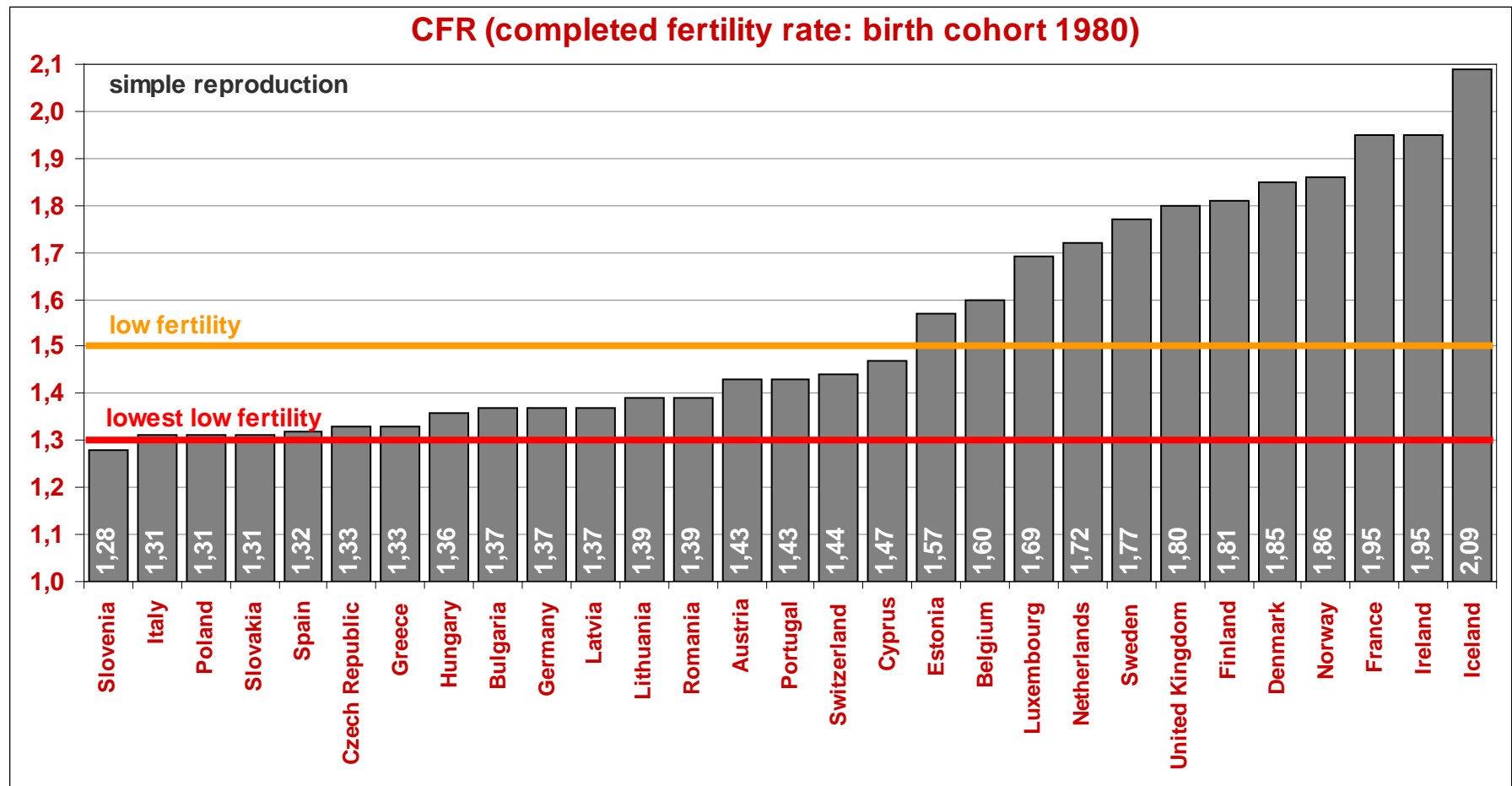
1. **Group** (Austria, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia) **shows the lowest low fertility level**, the youngest age at first childbearing, and medium frequency of extramarital births.
2. **Group** (Belgium, Cyprus, Germany, Greece, Italy, Malta, Spain, Switzerland) displays **low fertility, the oldest age at first childbearing, and low proportion of extramarital births.**
3. **Group** (Denmark, Finland, France, Ireland, Luxembourg, Netherlands, Norway, Sweden, United Kingdom), experiences **the highest fertility, high age at first childbirth, and a high share of nonmarital births.**

**Might this group represent forerunners of a suitable/sustainable fertility?**

*Traditional demographic correlations are violated: young age and low frequency of extra-marital births do no more correlate with high fertility levels!*

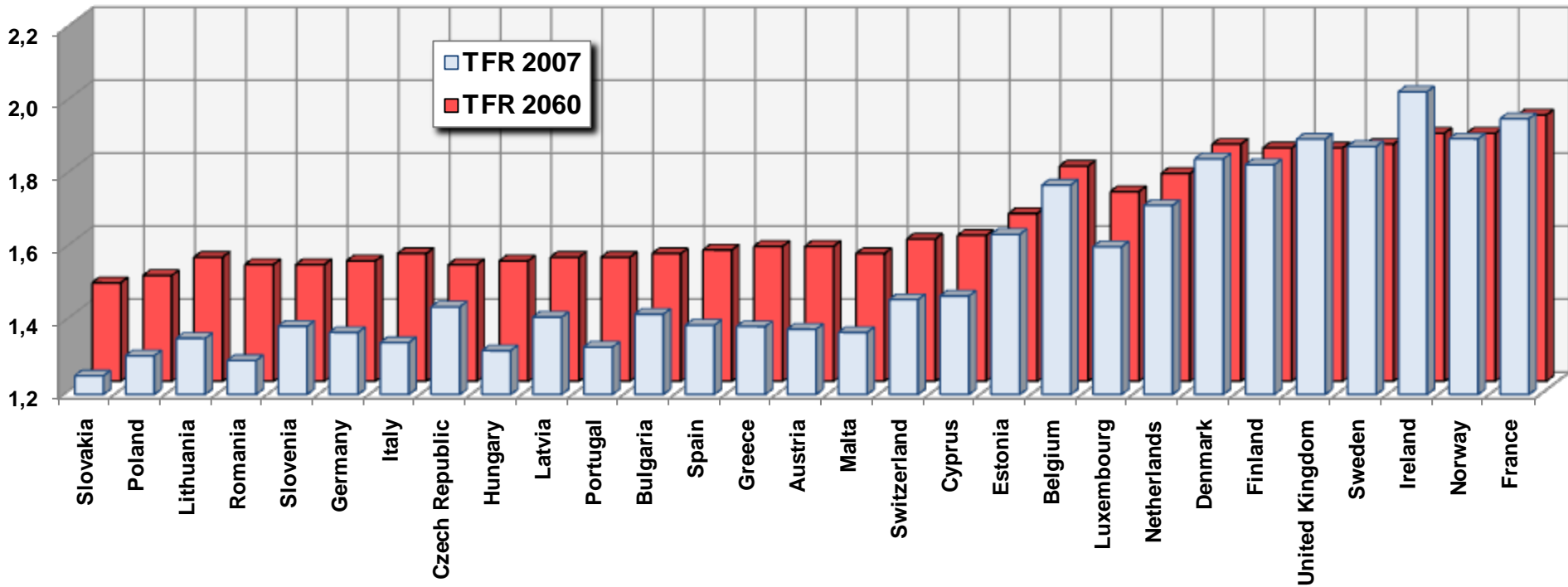
# Cohort fertility of women born in 1980: Possible future prospects?

Fertility rates for older ages estimated by using the rates observed for previous generations



# Current fertility and future prospects for Europe

## Is the expected TFR increase realistic in low fertility countries ?



Sorted according to 2060

Europop2008: Convergence scenario (convergence year 2150)

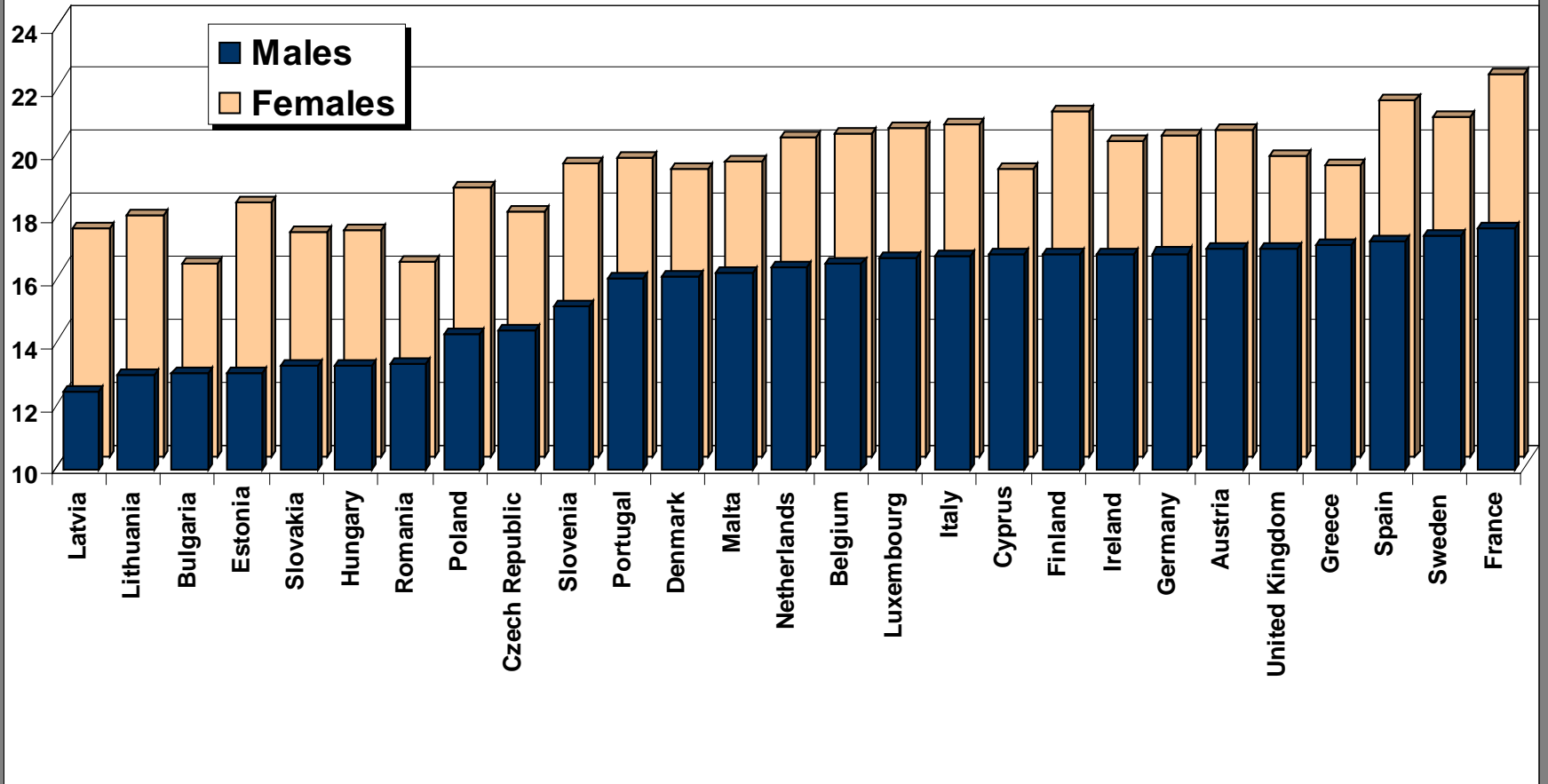


# Mortality change and its impact

- Decrease at older age in all countries
- Population 65+: *pension system*
- Population 80+: *health care system*

# Survival in EU27+(2): 2005

Life expectancy at age 65







**Population aging** (increase in the proportion of people age 65+ or 60+) **is the most challenging phenomenon in the 21<sup>st</sup> century.**

It is the outcome of the demographic transition from high to low levels of fertility and mortality.

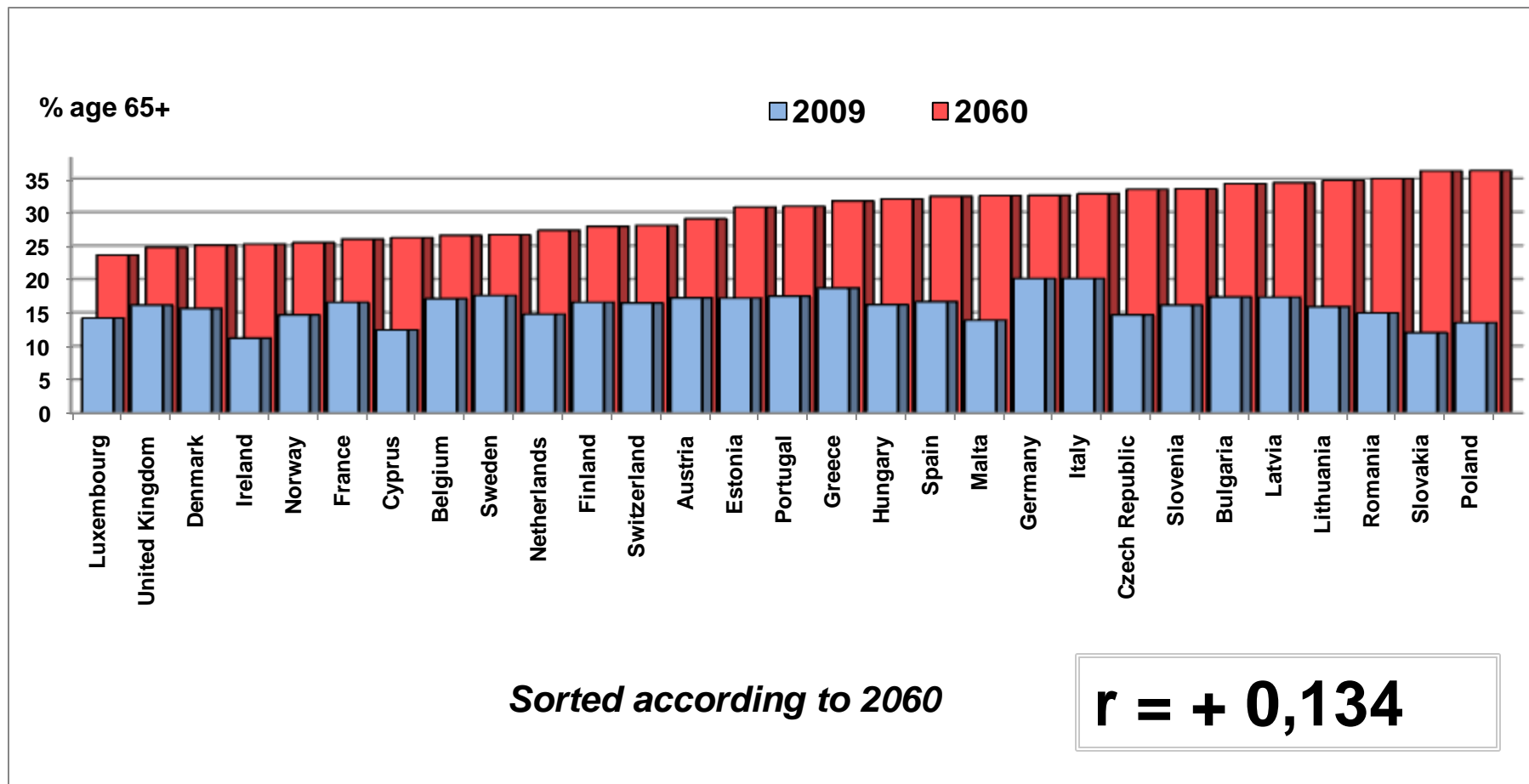
The role of international migration in this process has been less important than that of fertility and mortality.

**The older population itself is aging and the oldest-old (age 80+) represent the fastest growing age group.**

**Population aging** is a historically unprecedented and likely irreversible phenomenon.

*Population aging has implications on family composition and living arrangements, intergenerational transfers, pension system, health care system, etc.*

# There is no correlation in the share of 65+ between 2009 and 2060





# Fertility is the key factor as regards the future population ageing

**Proportion of population aged 65 and over in 2050 is correlated with** (based on EU27 countries):

|                                     |          |
|-------------------------------------|----------|
| Total fertility rate (2005)         | -0,591** |
| Population 65+ (2005)               | 0,454*   |
| Male life expectancy at 65 (2004)   | -0,004   |
| Female life expectancy at 65 (2004) | -0,043   |

\*\* Correlation is significant at the 0,01 level (2- tailed)

\* Correlation is significant at the 0,05 level (2-tailed)



**Very low fertility levels if maintained will lead to rapid population loss and an extreme form of population ageing in individual countries.**

**The population is projected to become older in all EU member states, Norway and Switzerland.**

**The share of people age 65+ is currently between 12% (Cyprus) and 20% (Germany, Italy). However, the figure will at least double in all EU 27+2 countries.**

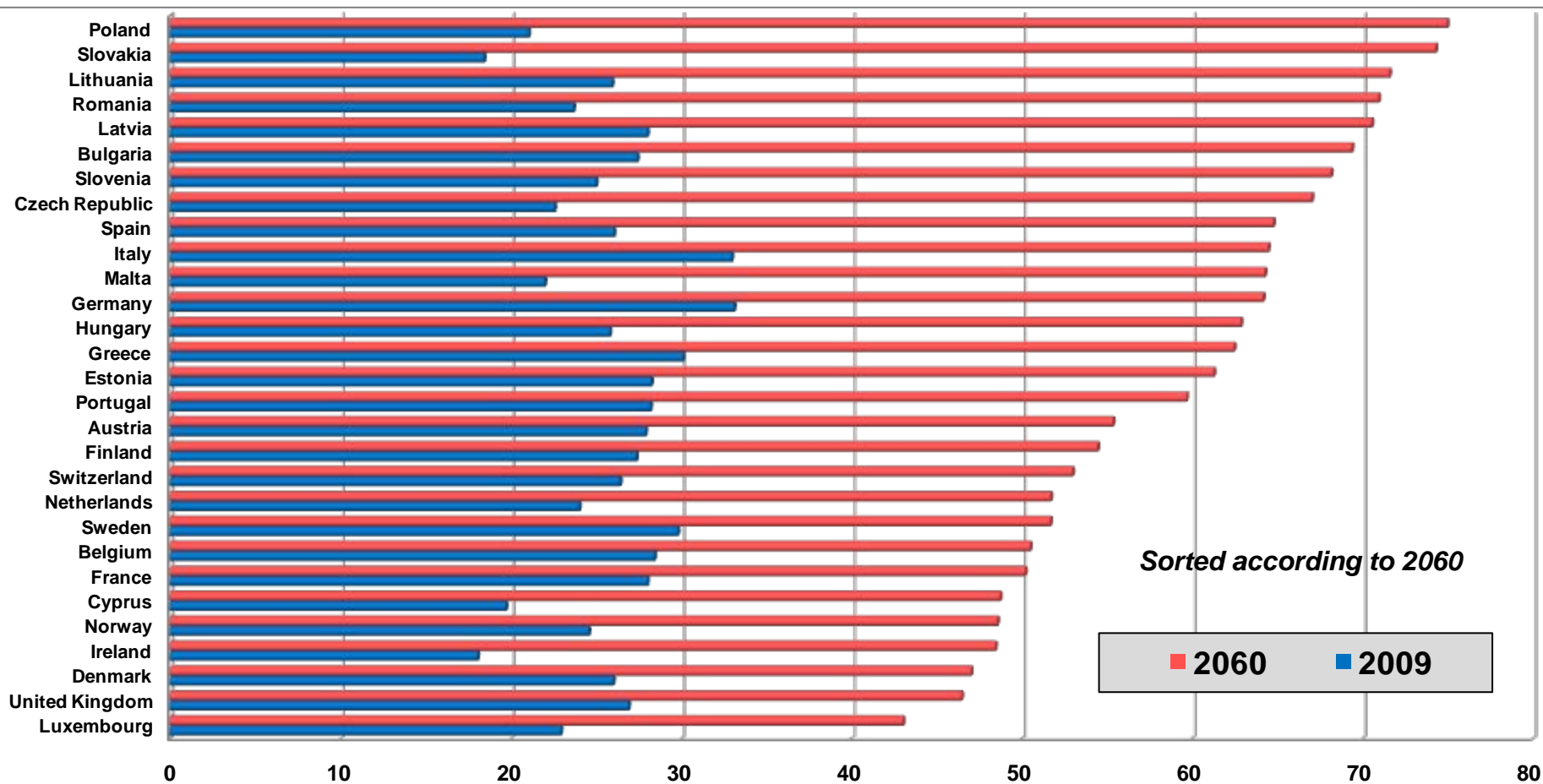
**In 2060, the share of people age 65+ is expected to reach a minimum of 24% (Luxembourg) and a maximum of 36% (Poland).**

**The oldest populations in 2060 will be: Poland (36.2), Slovakia (36.1), Romania (35.0), Lithuania (34.7), Latvia (34.4), Bulgaria (34.2).**

**The “youngest” in 2060: Luxembourg (23.6), United Kingdom (24.7), Denmark (25.0)**

# The oldest and the poorest

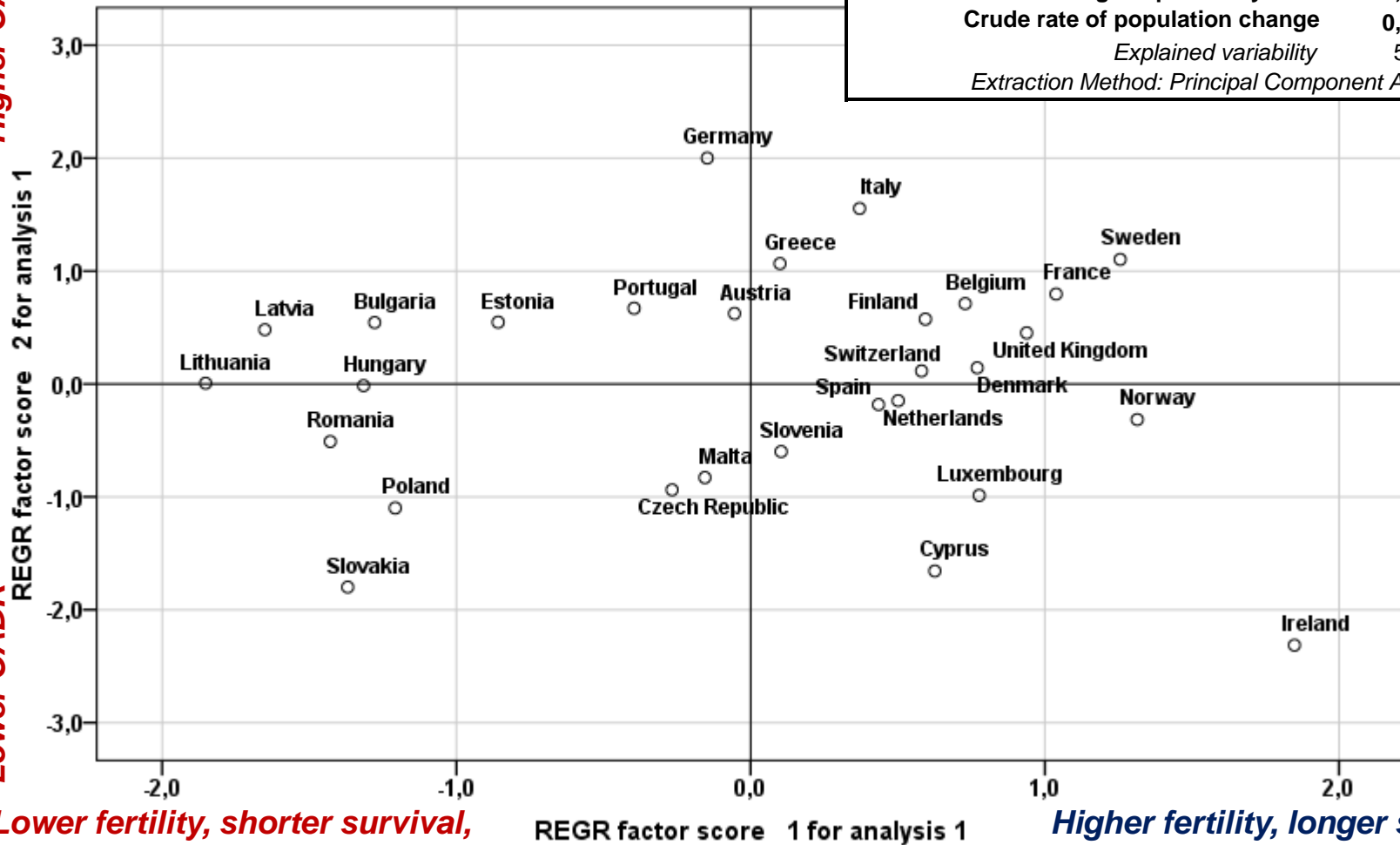
Old-age dependency ratio (population at age of: 65+/20-64\*100)



# Living more and reproducing less: conditions in 2007-2008

Higher OADR

Lower OADR

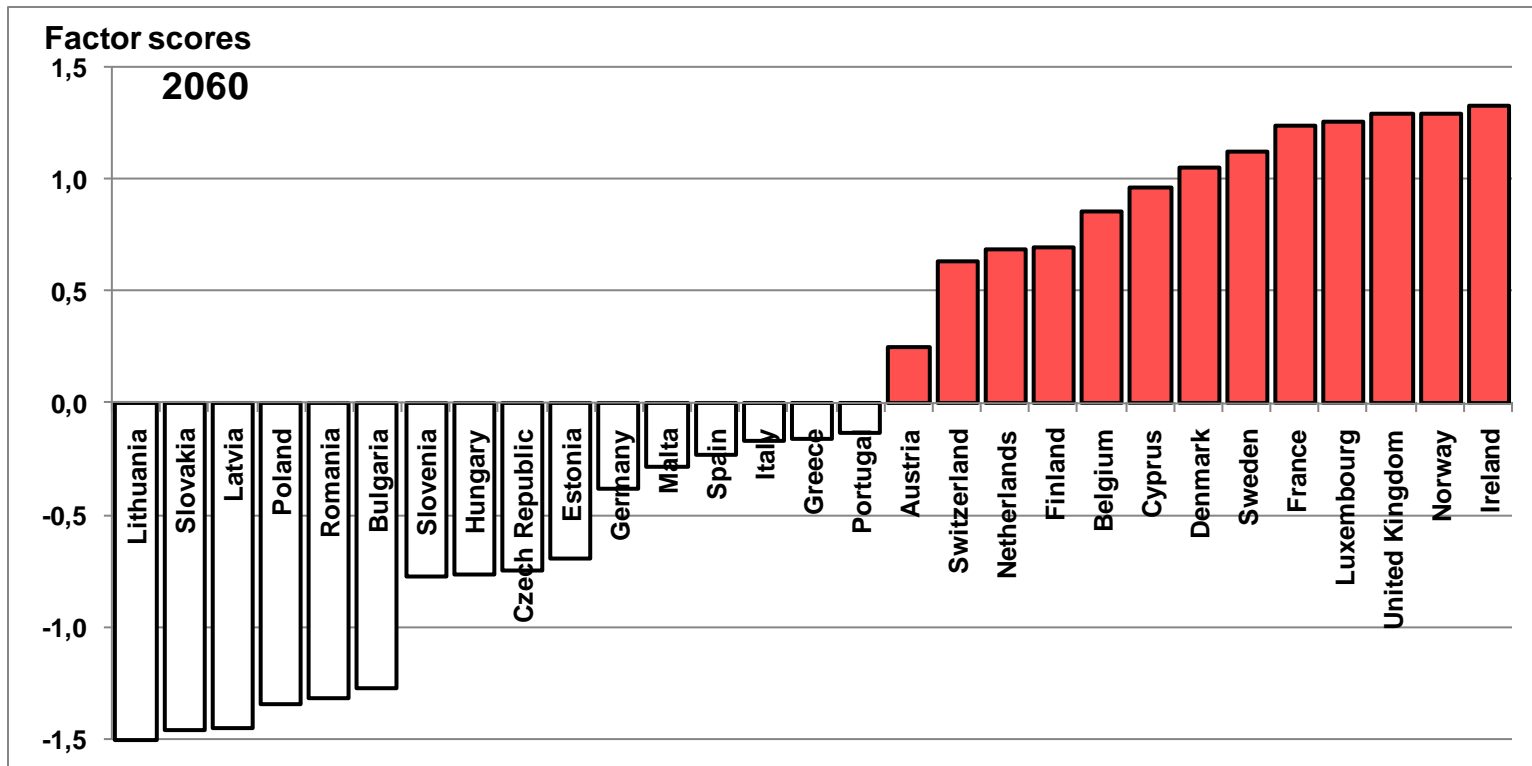


|   | Factor 1 | Factor 2 |
|---|----------|----------|
| Total fertility rate                            | 0,762    | 0,021    |
| Male life expectancy at birth                   | 0,881    | 0,092    |
| Old-age dependency ratio                        | 0,019    | 0,986    |
| Crude rate of population change                 | 0,816    | -0,478   |
| Explained variability                           | 51%      | 30%      |
| Extraction Method: Principal Component Analysis |          |          |

Lower fertility, shorter survival,  
negative population change

Higher fertility, longer survival,  
positive population change

# Demographic continuum in 2060 for EU27+Norway+Switzerland



**Lower fertility, shorter survival, negative population change, and high OADR**

|   | Factor |
|---|--------|
| Total fertility rate                            | 0,844  |
| Male life expectancy at birth                   | 0,807  |
| Old-age dependency ratio                        | -0,970 |
| Crude rate of population change                 | 0,969  |
| Explained variability                           | 81,10% |
| Extraction Method: Principal Component Analysis |        |

**Higher fertility, longer survival, positive population change, and lower OADR**

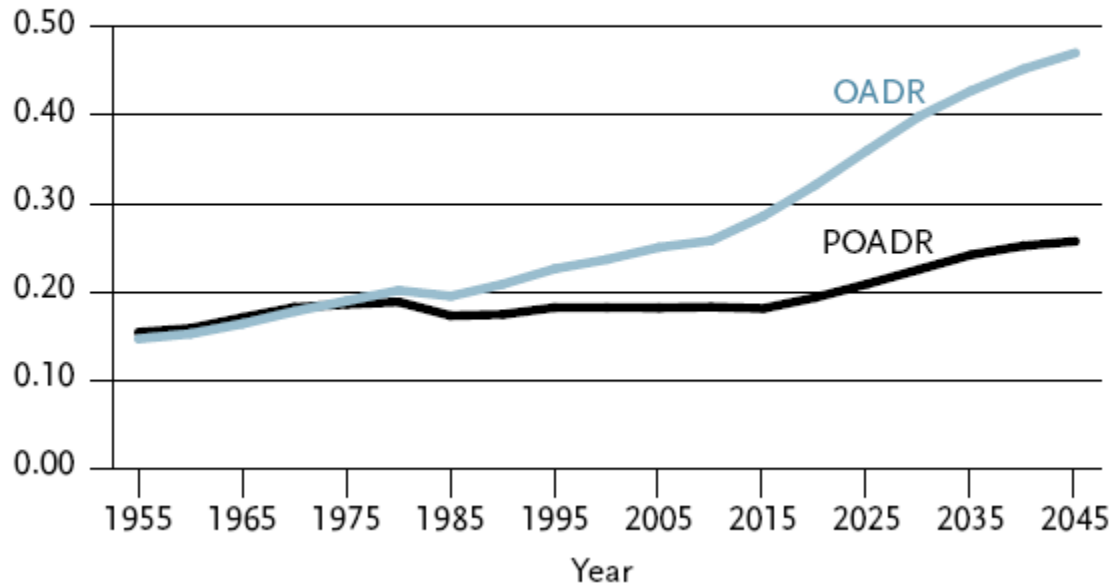
# Rethinking age and aging

by Warren Sanderson and Sergei Scherbov, Population Bulletin, Vol.63, No.4, 2008  
***With advances in health and life expectancy, the meaning of the number of years lived has changed.***

$$\text{OADR} = \frac{\text{Number of people 65 years or older}}{\text{Number of people ages 20 to 64}}$$

Panel B: More Developed

Old-age dependency ratio



**Prospective age** assigns ages to people on the basis of their remaining life expectancies in a reference year, not on the number of years that they have already lived.

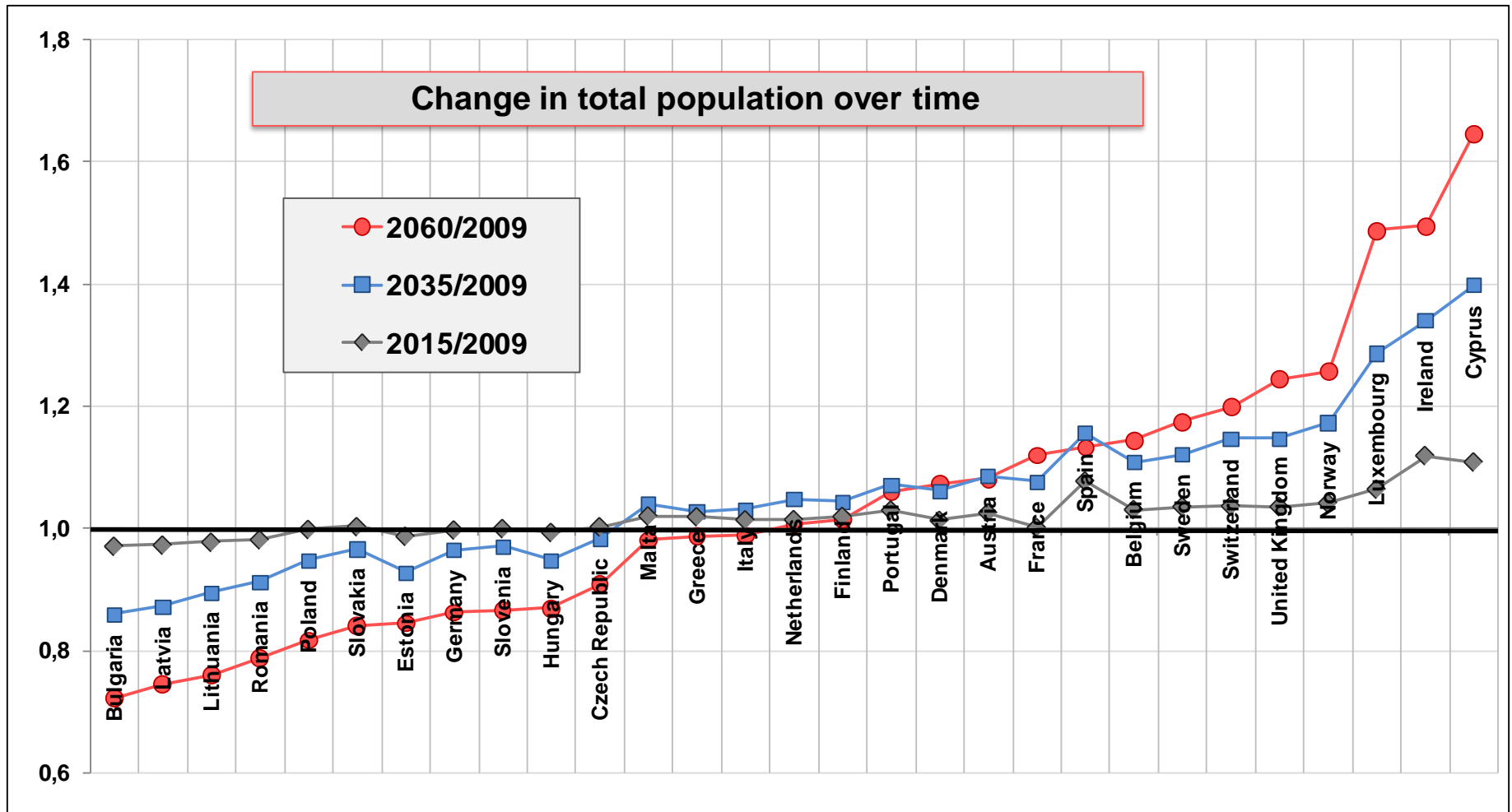
|      |                |                                      |
|------|----------------|--------------------------------------|
| 1952 | 30 Years Lived | Remaining Life Expectancy 44.7 Years |
| 2005 | 40 Years Lived | Remaining Life Expectancy 44.7 Years |



# Two turning points for EU27: 2015 and 2035

**2015: natural increase will convert in natural decrease**

**2035: start of the population decline**





## **Misfortunate Eastern and Central Europe seems to reemerge**

**Between 2009 and 2015 (or 2035 or 2060), the largest population decline is expected in Bulgaria, Latvia, Lithuania, and Romania.**

**The profound decrease will also be experienced by populations in Central Europe (Poland, Slovakia, Germany, Hungary, and the Czech Republic).**

**The previously high mortality in Eastern and Central Europe (with the exception of West Germany) will thus face a new threat of depopulation, this time primarily due to a long-term low or lowest low fertility.**



# **EU Old and New Members: keep being divided**

***The most substantial percentage decrease will be experienced by the populations***

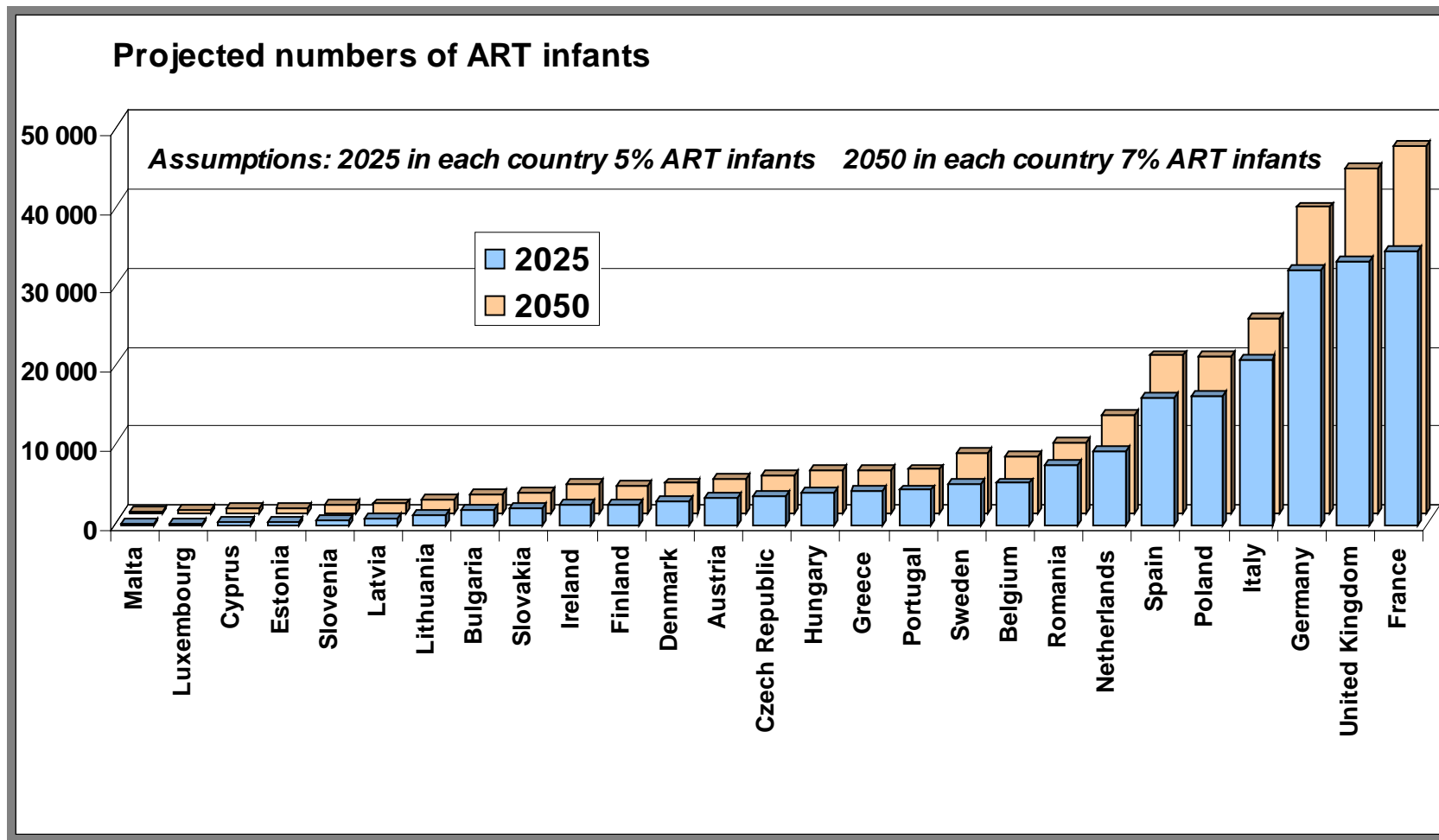
- in the fresh newcomers (**Bulgaria, Romania**),
- then Baltic States (**Latvia, Estonia, and Lithuania**),
- followed by Central Europe (**Czech Republic, Slovakia, Poland, and Hungary**)



# Can fertility be enhanced ?

- The role of family policy
- The role of ART

# Two scenarios for the future numbers of children conceived with ART



# Proposal I

- Building a society for all ages
- Enabling to have family at any age
- Reconciliation of work/education and family

- **Freedom of choice**

One standard life pattern  
should be avoided

*education-career-children*



# Proposal II

- **Access to ART treatment for people in need and at any age**
- **Giving priority to policies slowing fertility ageing**



# Conclusions

- Europe will remain the world's oldest region into the 21<sup>st</sup> century.
- In the process of population aging, fertility was and still remains the primary important driver while mortality starts gaining increased importance.
- **Population aging may be seen as a human success story—the triumph of public health, medical advancements, and economic development.**  
*(Global Aging : The challenge of success by K.Kinsella and D.R. Phillips, Population Bulletin, Vol.60, No.1, 2005)*
- However, in the future, countries of former Eastern Europe will accumulate all of the disadvantages:
  - Being the oldest, experiencing the lowest fertility, shorter life expectancy, and having the lowest GDP.





**Thank you**

***LEAVE POLICIES & RESEARCH, Praha 10. - 11. 2009***