



Who's afraid of population decline? An exploration of the consequences.

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After the demographic transition, what next?

Population decline back on the agenda after short absence (250 years), in context of divergent Western population trends.

Revives economic and social issues neglected since 1930s (Keynes, Reddaway), and ancient security, mercantilist concerns.

Changes balance of the international world order – uncomfortable adjustments in rank order, eclipse of ‘Old Europe’ by the USA, the demographic growth of Islam.

Global population decline possible before 2100.

**Unacceptable to (some) economists, but unavoidable environmentally?
Can global resources sustain universal Western levels of
consumption; effect of climate change on global carrying capacity?**

Contrast between population decline and small population

Distinction between process of *becoming smaller* and *being small*

–*process* problematic, *result* possibly beneficial?

Different kinds of decline –pace, reasons, consequences .

Crisis: Russia, Ukraine, Bulgaria.

Non-crisis: Germany, Italy, Japan.

Urban decline –part of economic modernisation as other cities grow (Liverpool), dispersal policy to improve living standards (Inner London and New Towns).

Regional decline – economic transitions (rust belts, rural depopulation).

The first threat of population decline.

Total Fertility and Completed Family Size in France, 1875 – 1976 and Total Fertility in the German Reich 1921 – 45, Federal Republic 1946-71 (and DDR 1947-76).

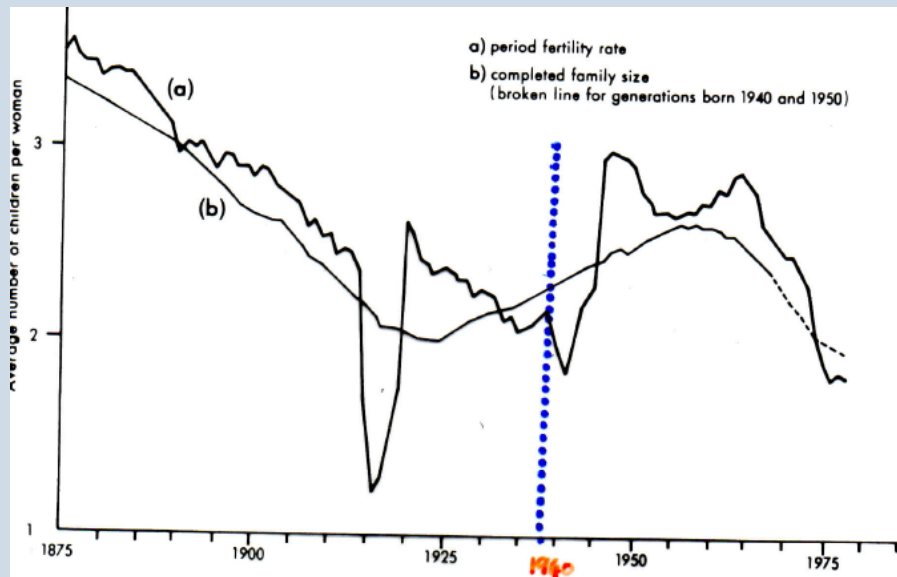


Figure 2: Period fertility rate and completed family size in France 1875 - 1976. (Source: INED, 1979, 1231)

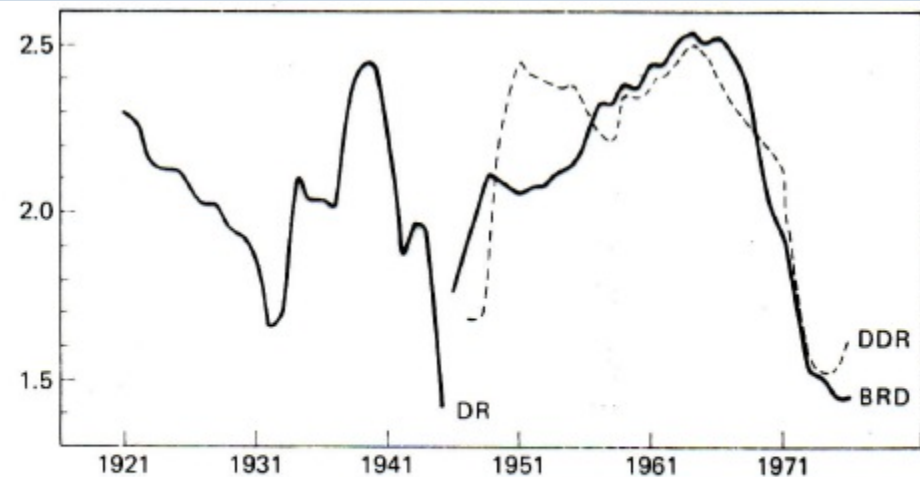
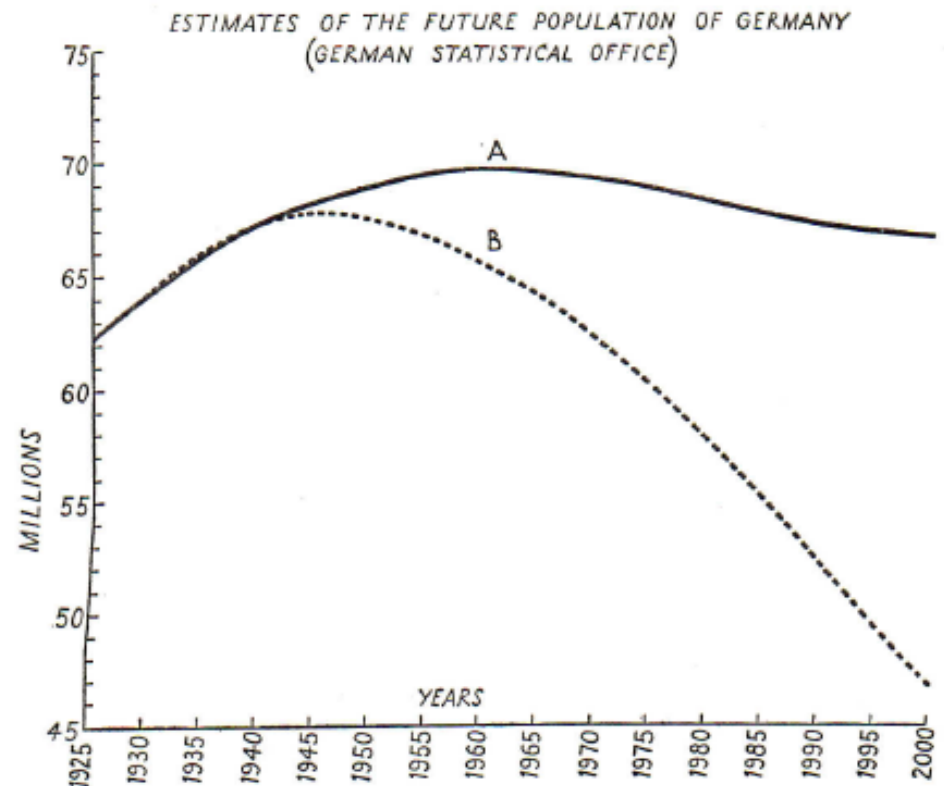
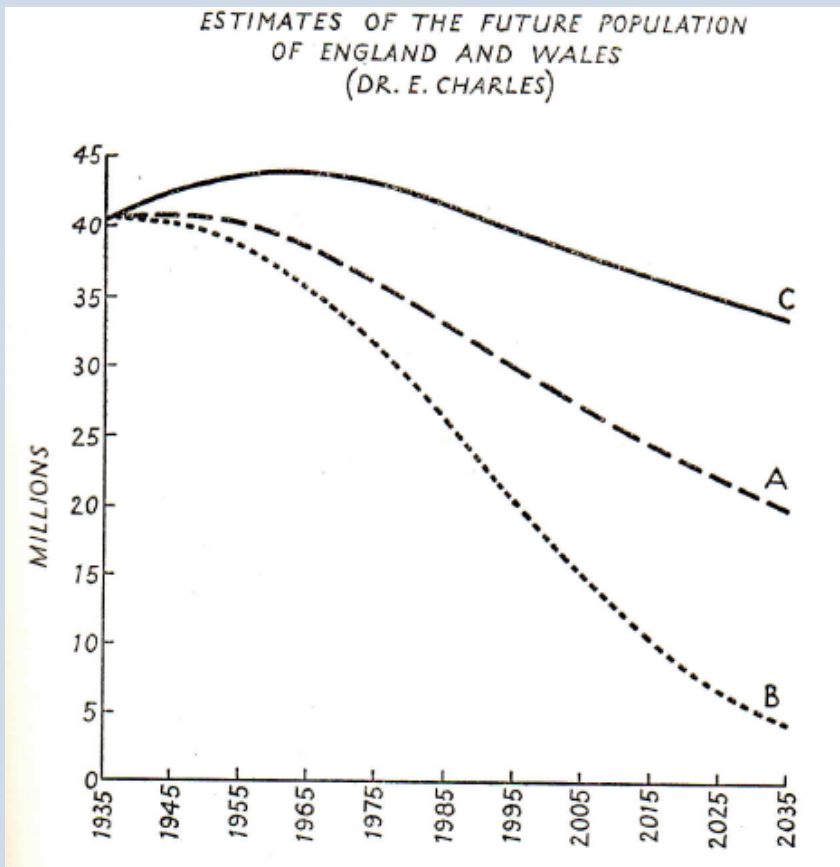


Figure 2.9: Total fertility rates in the German Reich 1921-45, in the Federal Republic 1946-71, and the Democratic Republic 1947-76

Source: *Statist. Jb. BRD* 1950 ff. Festy 1974, 822; *Statist. Jb. DDR* 1978, and author's calculations.

Parallel pessimism: 1930s population projections of England and Wales 1935 - 2035, and Germany 1925 – 2000.

Source: Glass, 1936. England and Wales (a) constant birth and death rates (b) fertility declines to 1985 © fertility returns to 1931 level. Germany (a)



Estimates of the Future Growth of the German Population⁵

- A. Assuming that the annual number of live births remains equal to that in 1927.
3. Assuming a fall of 25 per cent. in the fertility of potentially fertile women by 1955, fertility then remaining constant.

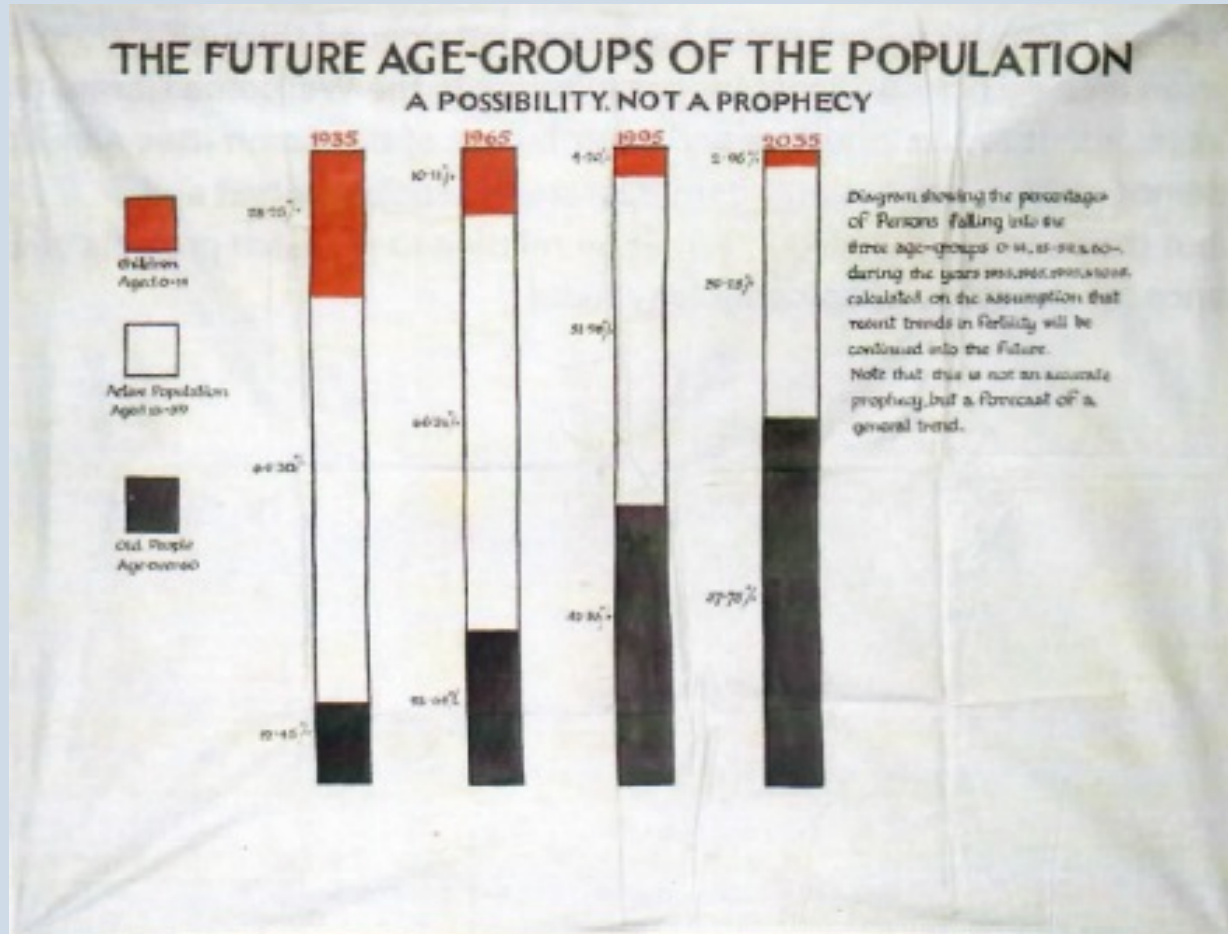
Total fertility and Net Reproduction, 1930s to 2000s

	Year	1930s		2000		2007
		TFR	NRR	TFR	NRR	TFR
Australia	1932/4	2.15	0.96	1.70	0.82	1.93
Canada	1931	3.19	1.32	1.48	0.71	1.57
England and Wales	1935	1.78	0.76	1.65	0.79	1.91
France	1935	2.06	0.87	1.89	0.91	2.00
Germany	1933	1.64	0.91	1.38	0.69	1.37
Italy	1930/2	3.29	1.24	1.24	0.58	1.29
New Zealand	1933	2.16	0.98	2.01	0.96	2.17
Sweden	1934	1.67	0.75	1.54	0.75	1.85
United States	1933	2.14	0.94	2.14	1.05	2.05

Sources: Glass and Blacker 1938 t.5, Eurostat, National Statistical Yearbooks.

The prospect of ageing as seen from the 1930s.

Source: Population Investigation Committee 1936 'The future of our population?'



The current position

Stabilisation of population assumed post-transition; not yet on offer.

Diversity within developed world –population growth substantial in (e.g.) UK, Sweden, USA; decline has begun in (e.g.) Germany, Japan, Bulgaria , Russia.

Serious decline in parts of CEE and FSU – collapse of state-socialist economic and demographic regimes; inadequate reform.

Moderate decline in S Europe (also E Asia) emerging for different, non-’pathological’ reasons.

Forecast decline in China (from 2040s), Brazil (by 2050); sub-replacement fertility now among half the world population.

USA major exception – heading towards first (but not last?) half-billion.

Probabilistic projection of world population growth

Article from IIASA's *Options* (Winter 2007)

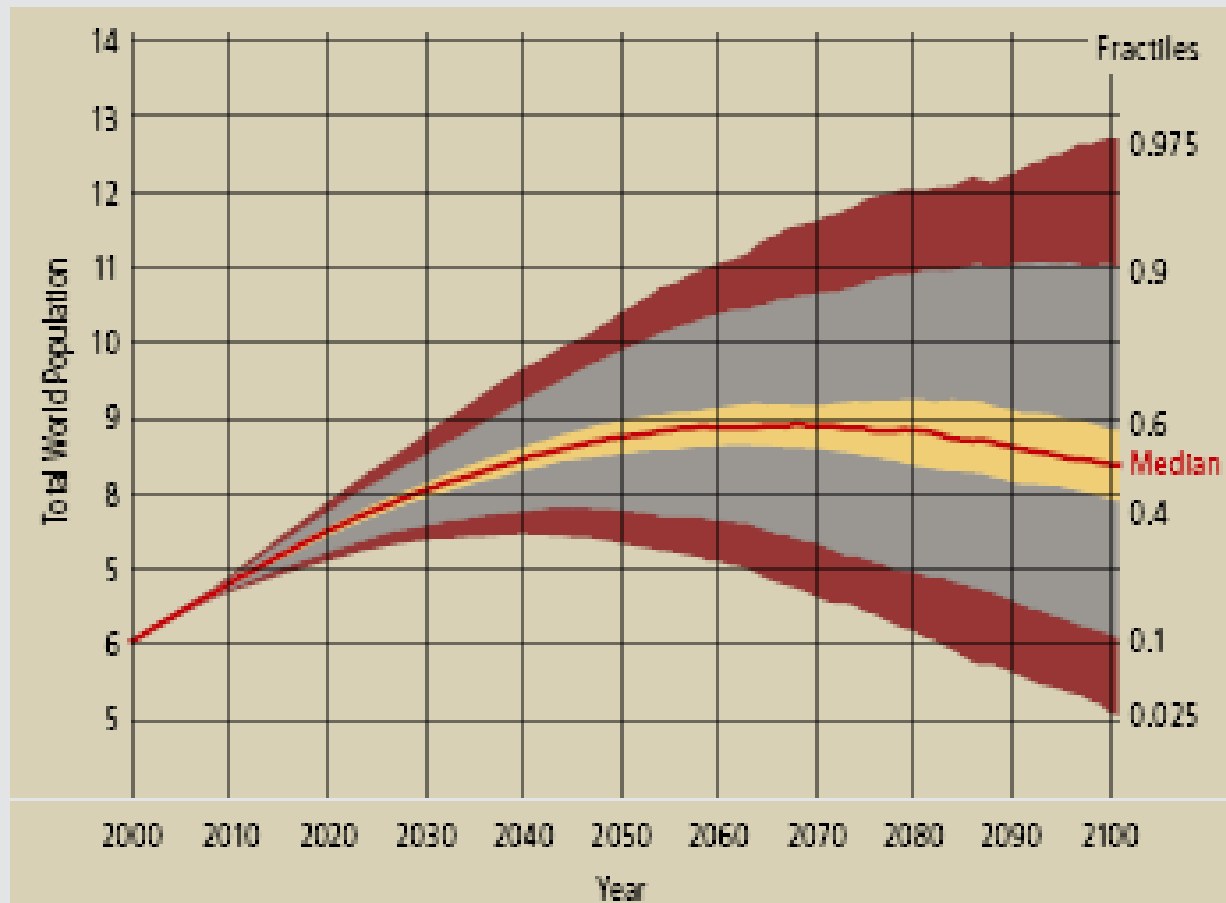
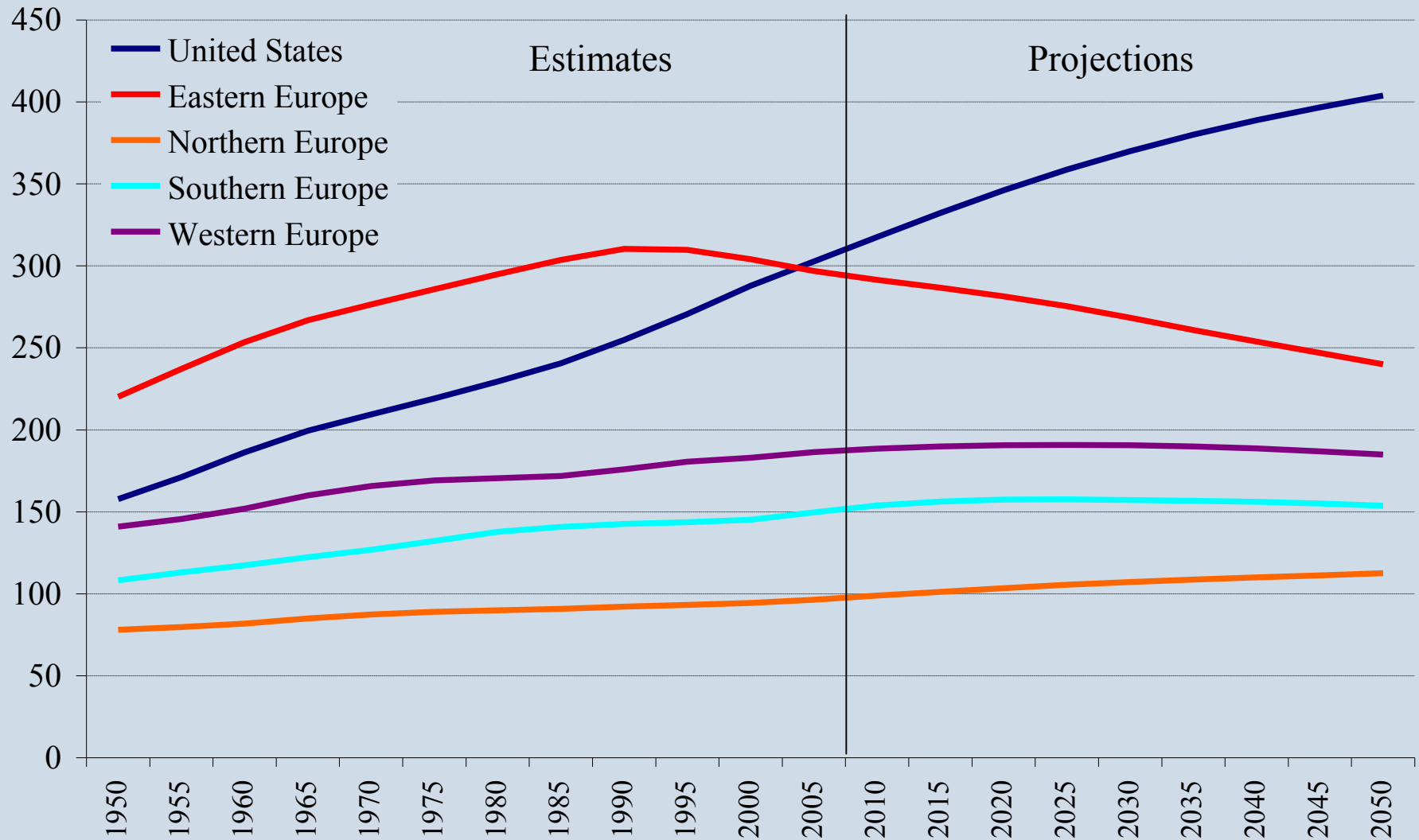


Figure 1. Uncertainty distribution of total world population to 2100, in billions.

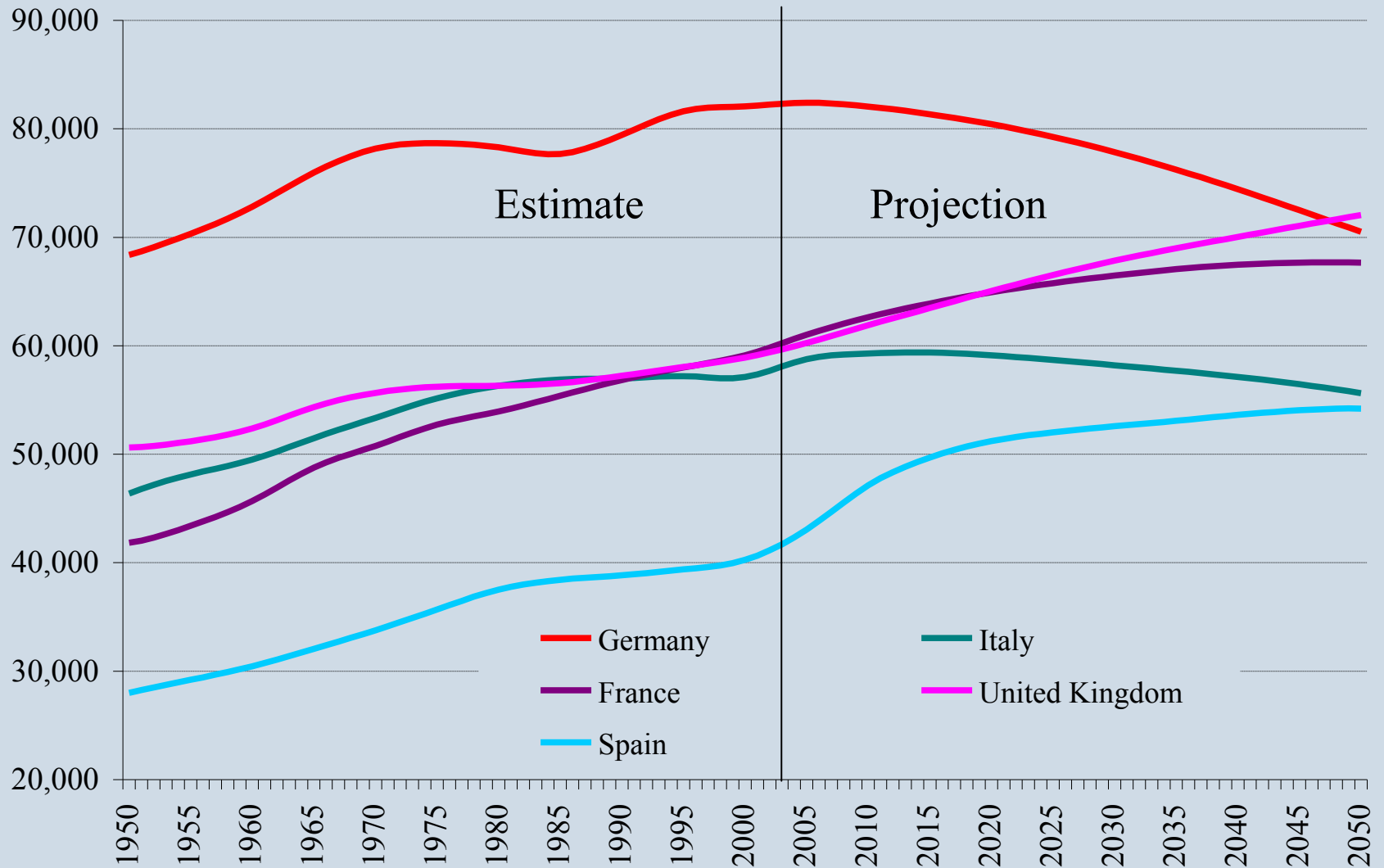
Population estimates and projections, USA and major European regions 1950 - 2050 (millions).

Source: UN 2008 - based medium variant projections.

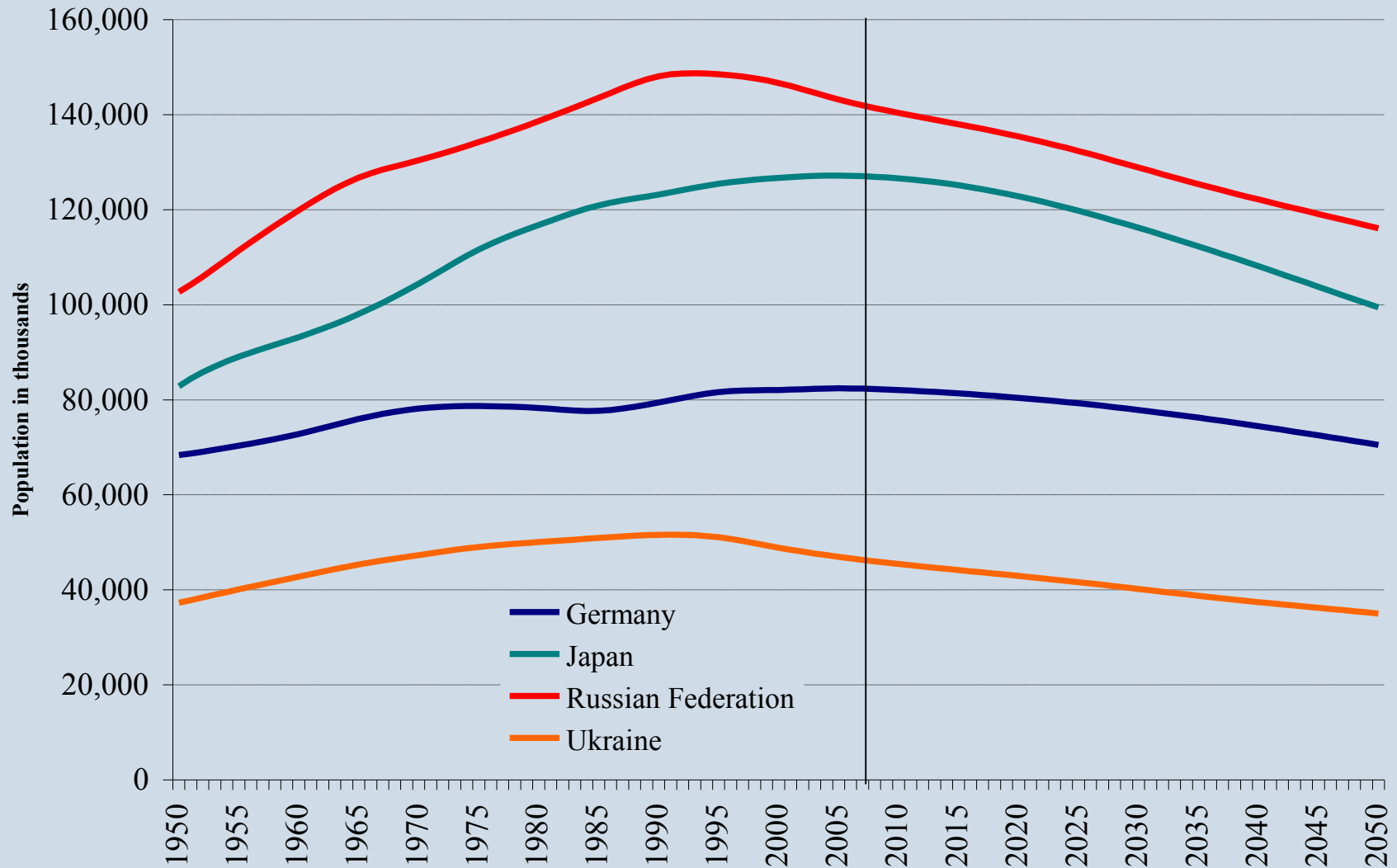


Projection, total population, major European countries 1950 - 2050 (thousands),

Source: UN 2008 World Population Prospects (pre-publication data)



Four major examples of actual and projected population decline

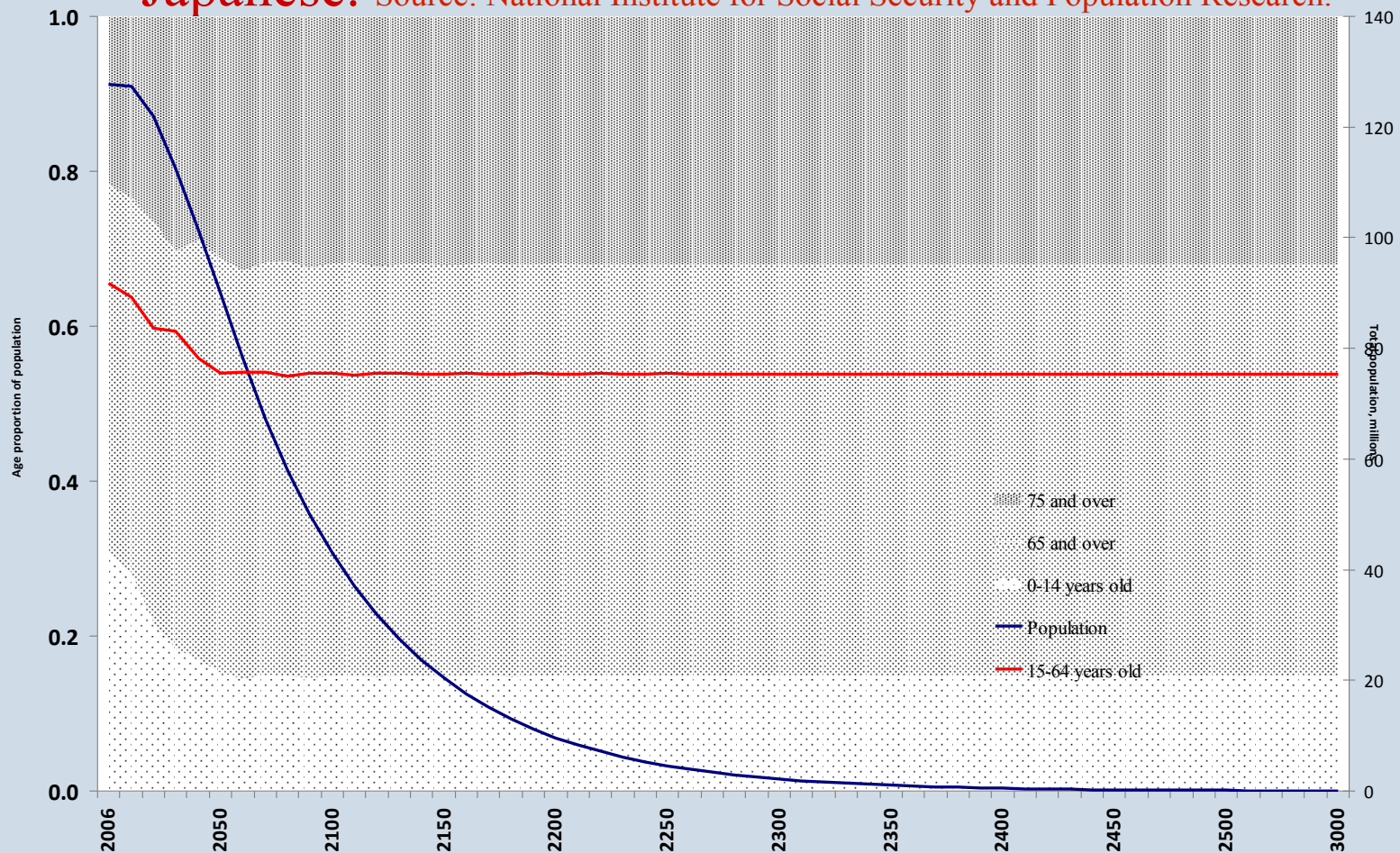


Natural and total population change in Europe, 2008, per 1000 population..

Natural increase		Total increase		Natural decline		Total decline	
10.5	Ireland	Ireland	14.6	-0.1	Italy	Croatia	-0.3
6.3	Albania	Switzerland	14.1	-0.3	Lithuania	Estonia	-0.4
4.5	France	Norway	13.1	-0.5	Estonia	Lithuania	-0.5
4.0	Norway	Kosovo	12.8	-0.8	Moldova	Russian Fed.	-0.7
3.5	UK	Spain	12.0	-1.5	Romania	Romania	-1.4
3.0	Netherlands	Slovenia	11.0	-1.9	Croatia	Hungary	-1.4
2.9	Spain	Czech Rep	8.3	-2.0	Germany	Moldova	-1.5
2.2	Belgium	Belgium	8.2	-2.5	Russian Fed.	Belarus	-1.8
2.0	Switzerland	Sweden	8.0	-2.7	Belarus	Germany	-2.0
2.0	Finland	Italy	7.3	-3.1	Hungary	Latvia	-4.2
1.9	Sweden	UK	7.2	-3.1	Latvia	Bulgaria	-4.4
1.9	Macedonia	Denmark	7.2	-4.3	Bulgaria	<i>Serbia</i>	-4.6
1.9	Denmark	France	5.8	-4.6	Serbia	Ukraine	-5.0
1.4	Czech Rep.	Netherlands	5.0	-5.3	Ukraine		

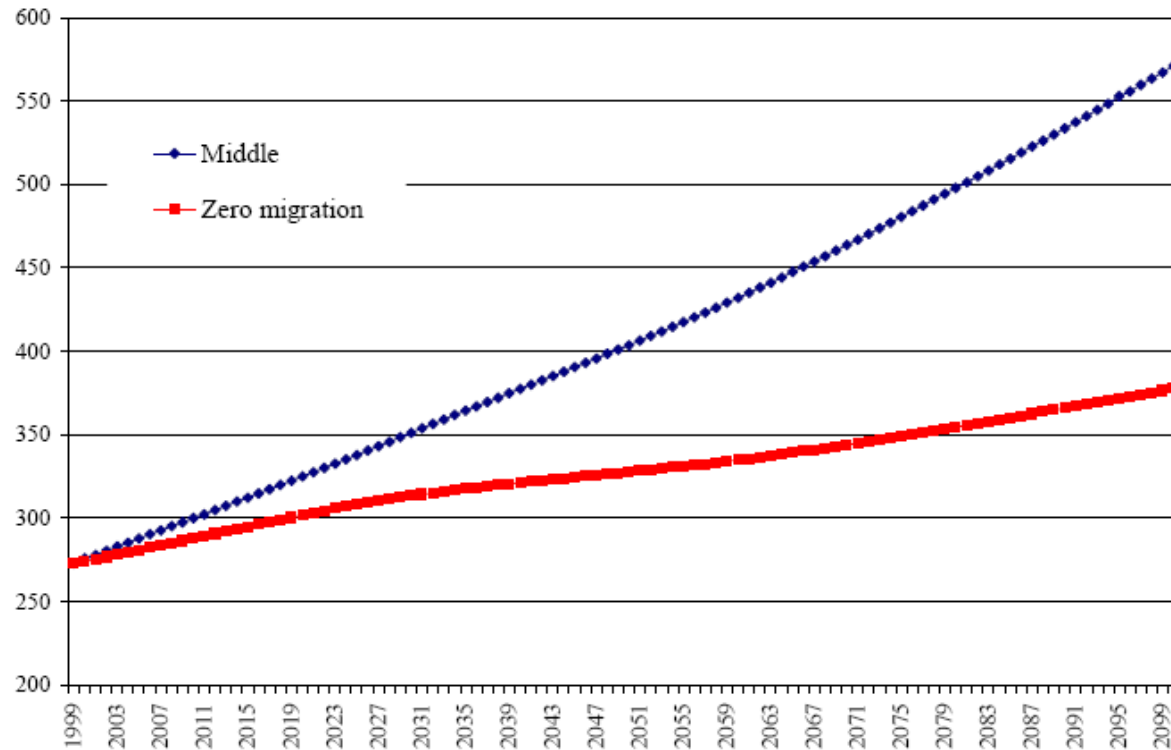
Japan: Population Projection to 3000 – down to the last Japanese.

Source: National Institute for Social Security and Population Research.



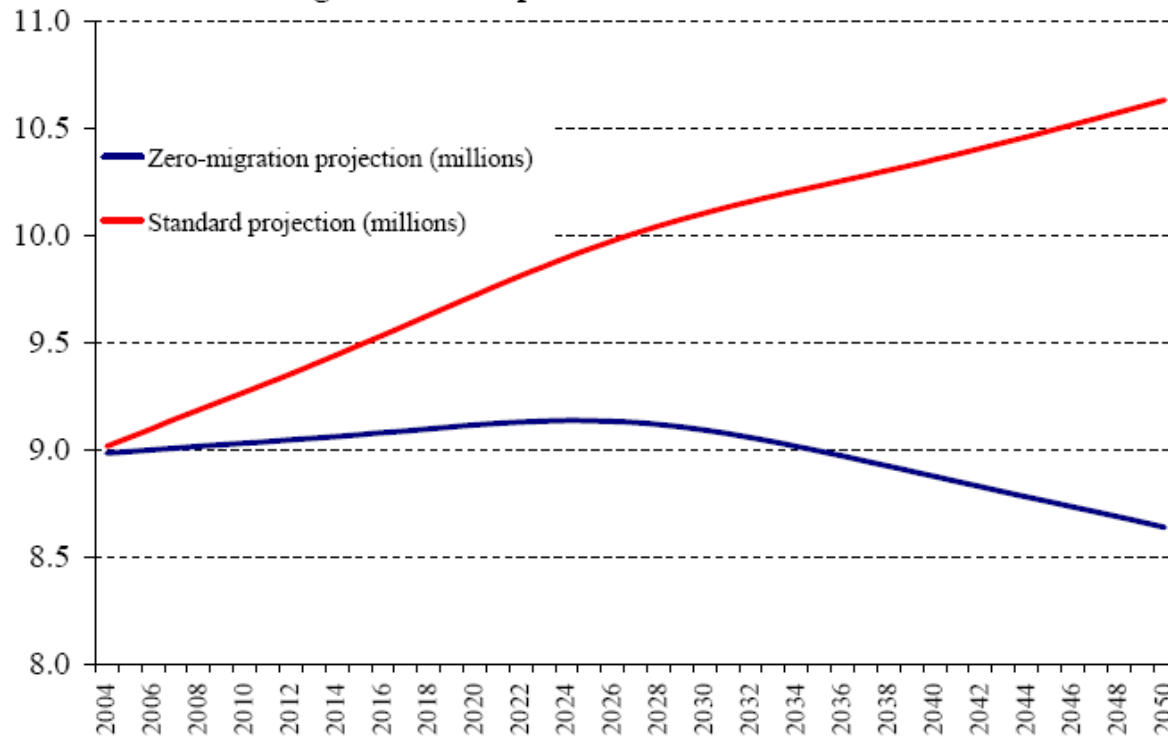
USA – towards the first half- billion

US Population Projections 1999 - 2100. Middle Series and Zero Migration (millions)



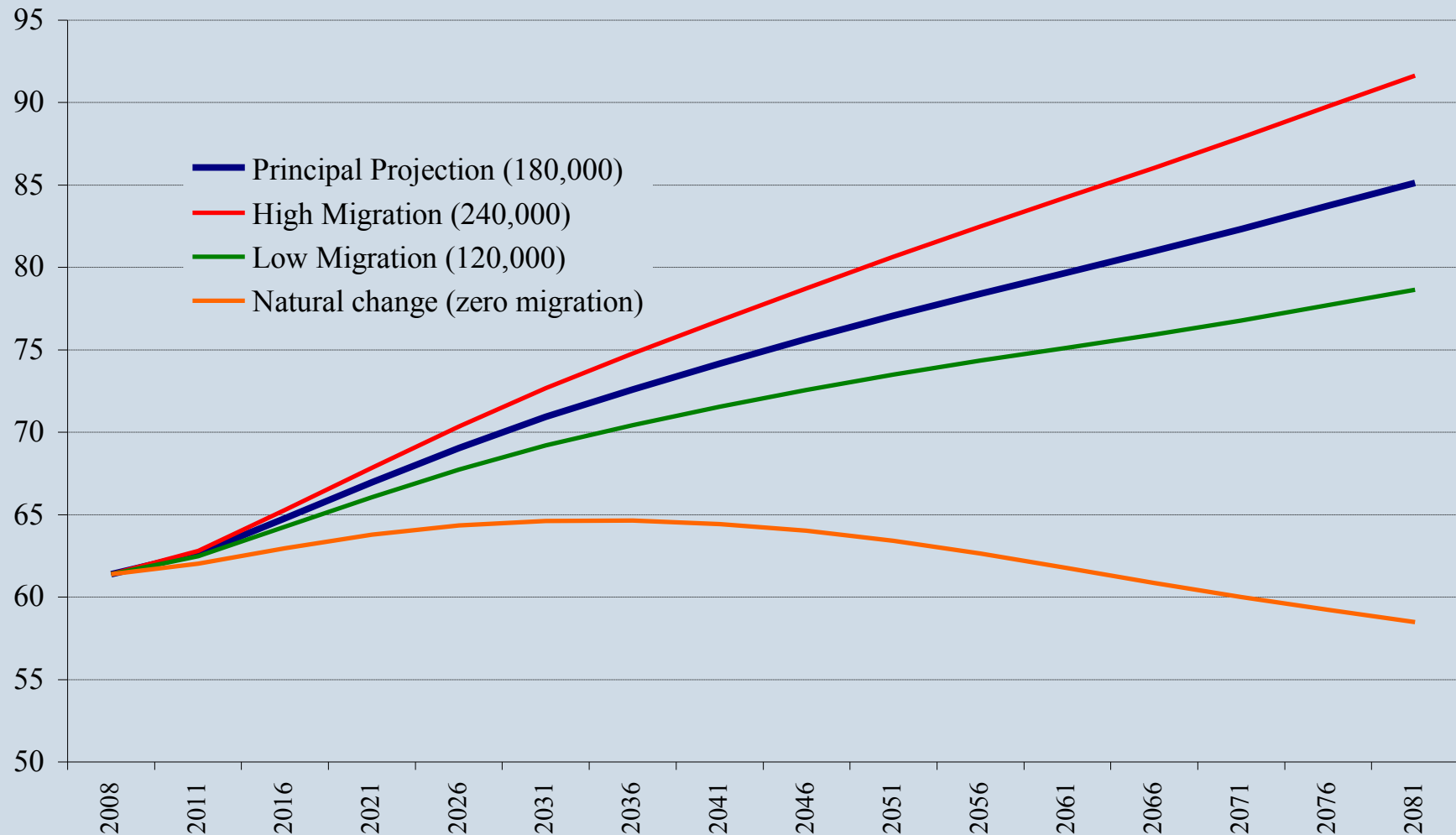
Sweden 2004-2050: projected total population, millions, standard and zero-migration assumptions.

Projected total population, Sweden 2004-2050, standard and zero migration assumptions. Source: Statistics Sweden.

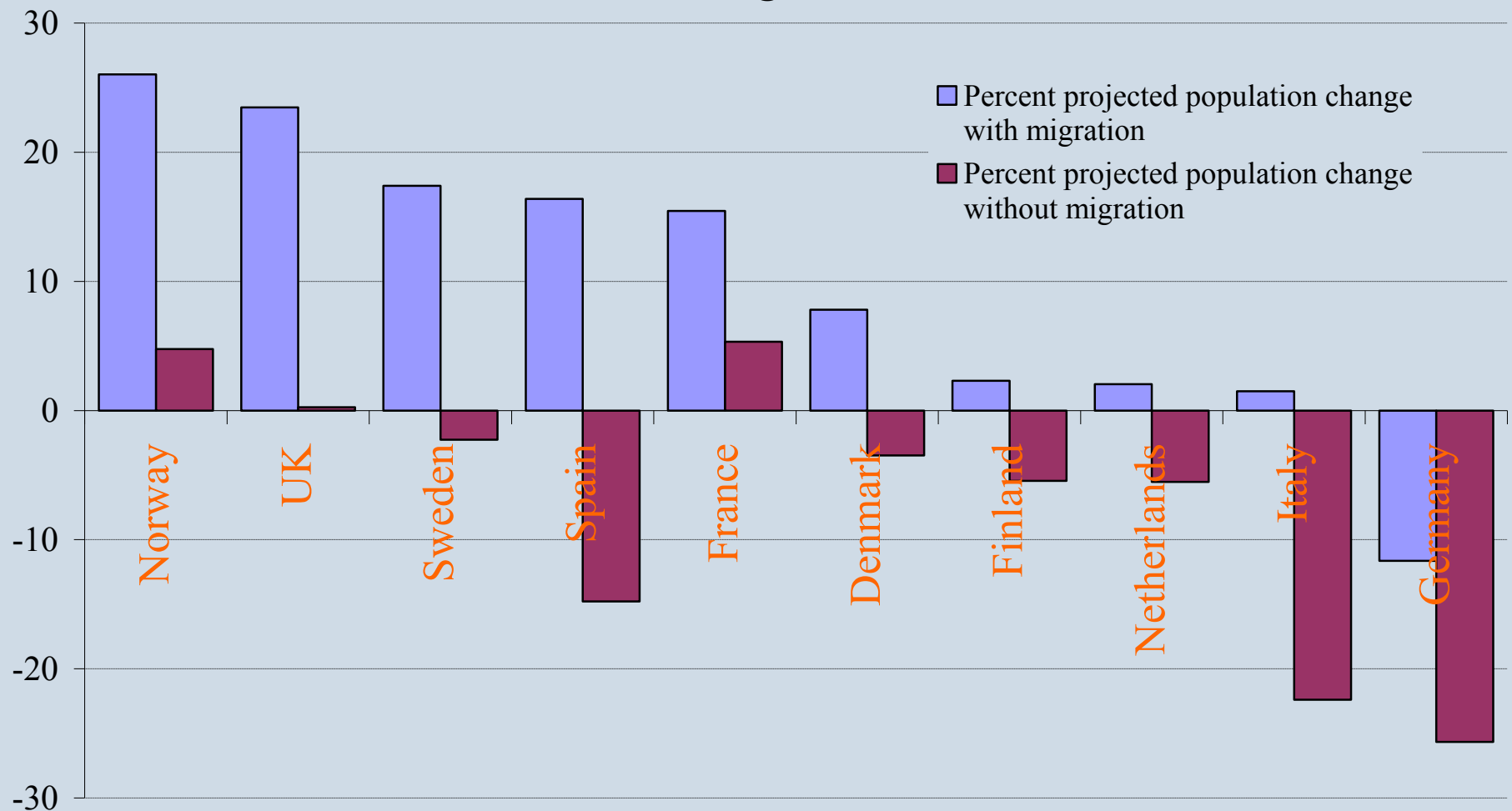


Population projection, United Kingdom 2008 - 2081 (millions).

Principal Projection and migration variants. Source: ONS 2009.



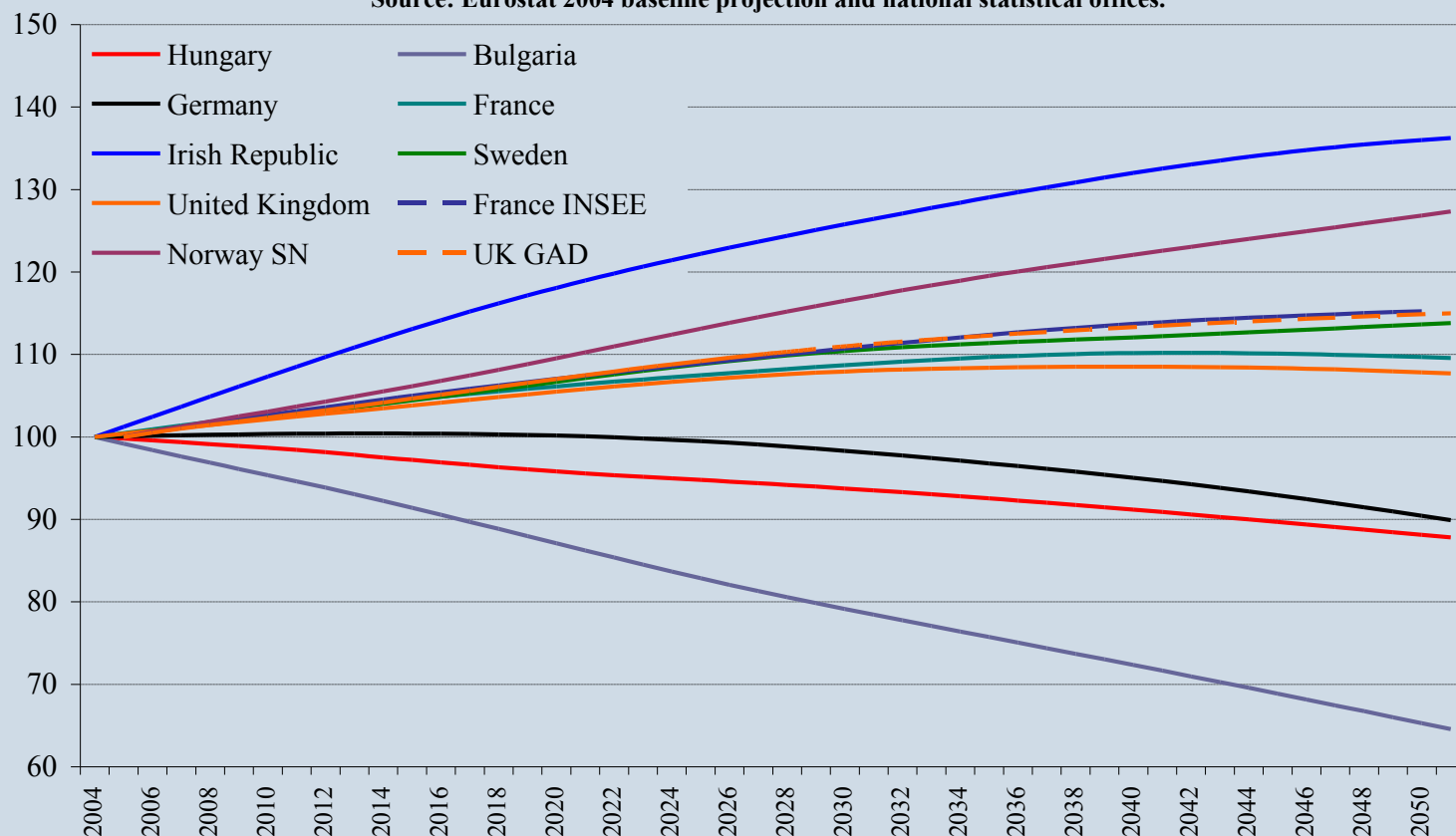
Population change in selected European countries 2008 - 2055, percent,
with and without migration. Source: Eurostat 2007



Diverse prospects – projected population of selected countries, set at 100 in 2004.

Diverse population prospects 2004-2051 (2004 = 100).

Source: Eurostat 2004 baseline projection and national statistical offices.



Ageing and decline – divergent sisters: different dynamics, different consequences

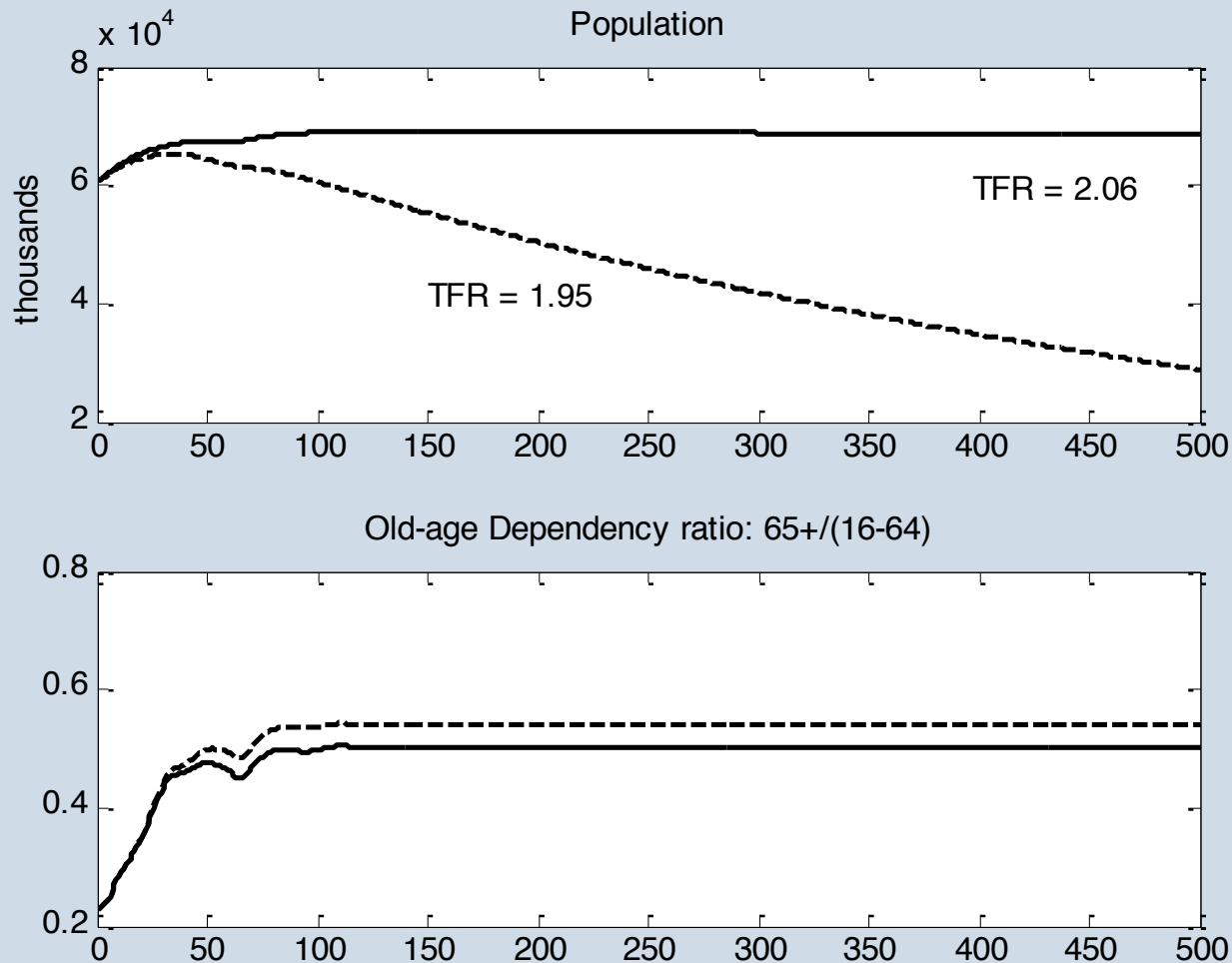
Most policy, academic interest in ageing, not in decline
Common cause in low birth rates; one does not cause the other.

Immigration (usually) moderates both; emigration may not.
Mortality decline has opposite effects - in modern populations,
moderates decline, exacerbates ageing.

Divergent effects of constant sub-replacement fertility (in absence of migration):

- Population structure ages but stabilises at new (older) age-distribution.
- Population size never stabilises but declines indefinitely.

Divergent effects of mortality decline on population size and structure (no decline in death rates after 2081)



Decline negates benefits of population growth?

‘Axiomatic’ benefits of growth and large population perceived from earliest times. Mercantilist / imperialist ideals. ‘No growth’ contrary to American Dream.

International power and security –state resources versus individual welfare –Alfred Sauvy’s ‘power optimum’.

Younger, more productive population (avoid ‘old men in old buildings thinking old ideas’ - Sauvy).

Economies of scale in manufacture, large domestic market.
High development costs of new products affordable.

Guarantee of demand for goods and supply of labour; stimulus to investment and innovation.
More geniuses (Julian Simon).

The downside of population growth in developed economies (impact density-dependent):

No direct benefit to individual (no effect on GDP per head).

Possible balance of payments problems.

Increased import dependency for food and raw materials.

Inequality and inefficiency: marginal populations can be ignored;
encourages reliance on labour inputs, not capital, for output.

Increases housing costs as percent of income.

Increased costs of congestion and crowding.

Damage to countryside and wildlife

Accelerates contributions to global climate change: predicted effects
now within time-horizon of population projections.

A depressing process of decline?

GDP growth declines as size of workforce declines.

Psychologically depressing –conventional sign of failure and decay.

Erosion of investor confidence in new products: declining markets, ageing plant, falling competitiveness.

Failure of demand for goods (Malthus, Keynes et al.) combined with rising wage pressures squeezes profitability.

Contraction of schools and colleges; less tax revenue to maintain infrastructure.

Contracting housing market puts construction companies out of business; deflation of house prices erodes asset value for retirement.

Dependent relict non-viable local populations (e.g. English mining villages, rural NW Bulgaria).

The irrelevance of population growth and size for individual welfare

Figure 1a
GDP per head and population size in Western Countries and Japan in 2000

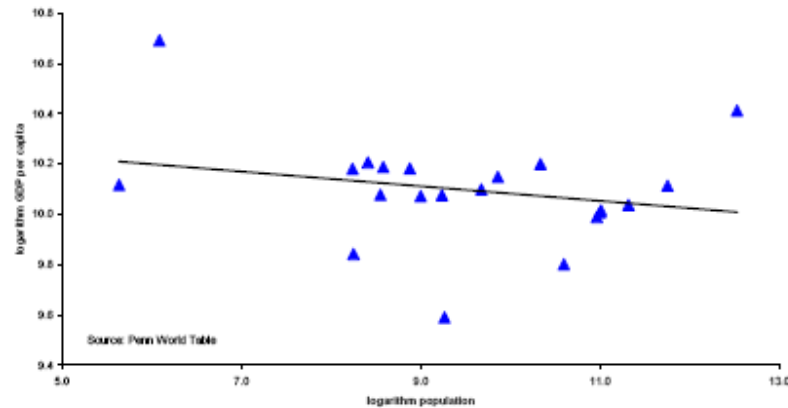
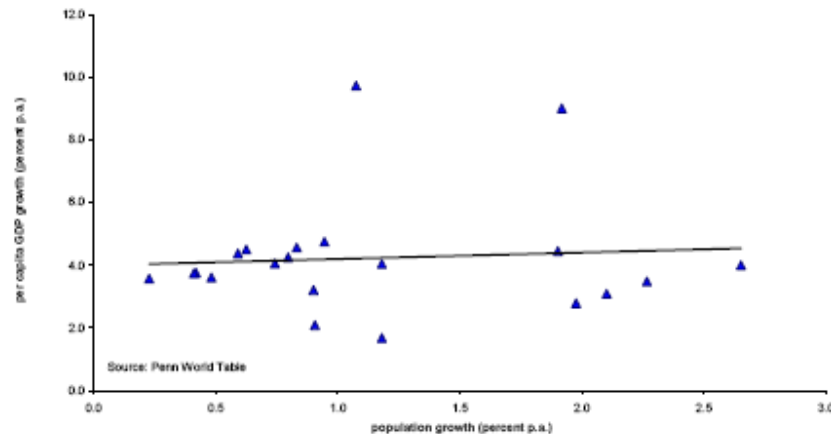


Figure 1b
Growth of Per Capita GDP and Population in Western Countries and Japan 1980-2000



Being smaller

Smaller voice on international scene, market must be more export-oriented,
Weak military security, politics alliance-oriented, become 'history-taker'.
High technology projects less affordable, but less defence spending.

No correlation between population size and pc GDP
Balance of payments eased, higher self-sufficiency.

Redundant marginal infrastructure demolished.
Permanently lower congestion and housing costs.

A more equal society – higher real wages, lower unemployment.
More space, freedom of movement, flexibility in land use.
May promote fertility increase; end population decline?

Permanent environmental advantages.

The actual experience

Some official reports accept / welcome population stabilisation: Royal Commission (1949); Population Panel (1973); Royal Dutch Commission on Population (1977). Encouragement of emigration.

No empirical relationship in developed world between pop size, growth and p/c GDP.

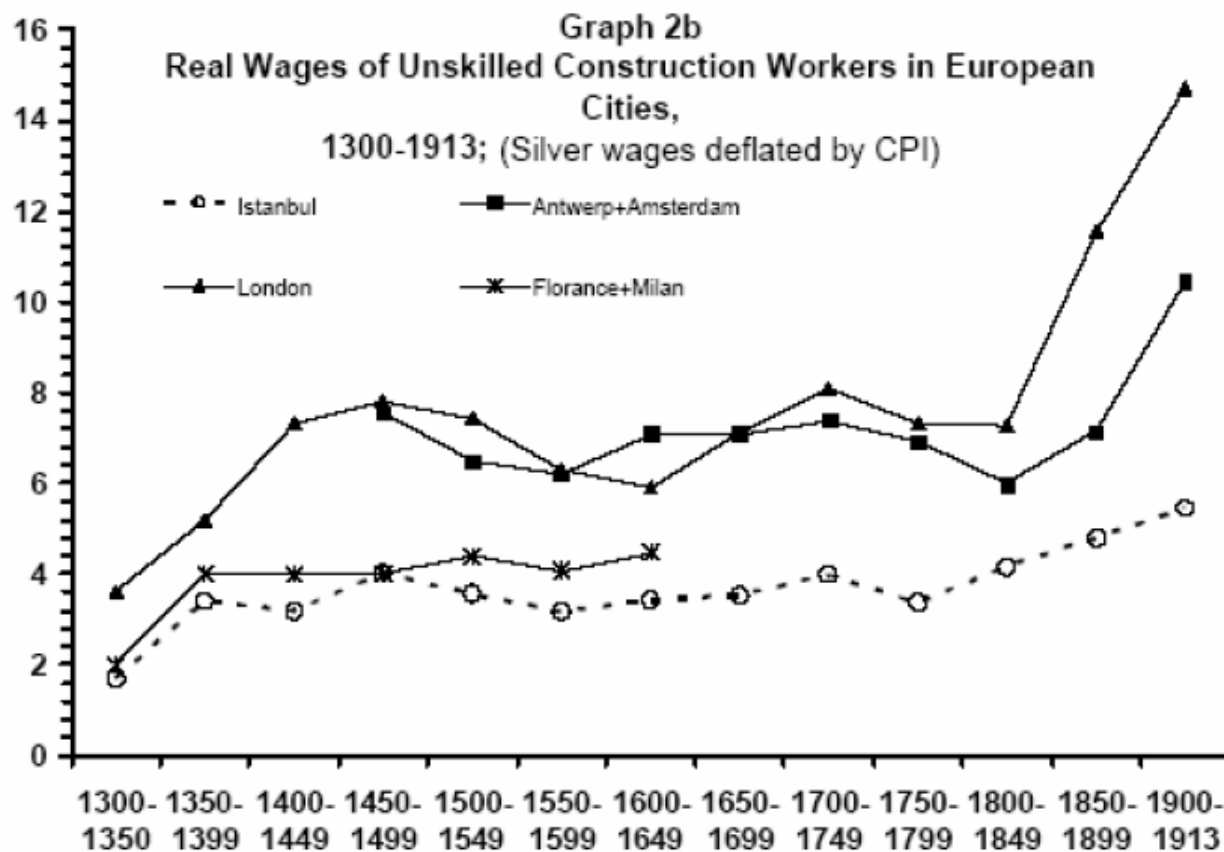
No effect on individual welfare from population loss through boundary changes (Austria, Germany, UK).

GDP per head growth continued in 20th C Ireland, W. Germany, despite population decline.

Ancient historical examples?

Prior experience - fewer people, higher wages?

Source: Pamuk 2004.



Population stabilisation or reduction a near-universal choice – at family level

Are the world's couples choosing sub-replacement fertility – at least for the time being?

Raises question of feedback relations, if any, between population and family building.

Homoeostatic relationship assumed axiomatic in earlier centuries (e.g. Malthus, Wrigley and Schofield 1981).

Negative feedback in modern societies probably underestimated. Some resources still non-reproducible, still diminishing returns.

Has Western population 'overshot'? (Ehrlich and Kim 2005). Replacement fertility since 1930s but pop increased 20% - 80% since, thanks to 'demographic momentum'.

Possible empirical relationship in developed world between population density and fertility (Lutz et al. 2005).

Conclusions: why worry about population decline?

Russia, Ukraine etc examples of 'crisis' decline. Germany, Japan more instructive.

Gross military, economic power related to population, but relative Western decline inevitable.

No advantages to individual from population growth. No relationship of GDP per head to population growth or size in Western developed world.

Effects of 'process of decline' and 'being small' not the same.

Modest, slow decline might be welcome (as long as it stops) for social, economic and environmental reasons. But defining optimum population difficult (?impossible?)

Rapid, substantial decline harmful: population ageing, investment and labour force, 'confidence'. Little known about modern economics of decline.

Climate change may force end to growth, depress population.

Demographic feedback – the invisible elephant?

Feedback and interaction mechanisms notably absent from much recent demographic thinking and official projection. BUT:

Are SDT and population ageing both affordable?

Do projections influence demographic futures?

Can trends be self-reinforcing (US, Japan, Italy)?

Could population decline promote fertility increase?

Does (ethnic) immigration promote (native) emigration?

Can ‘poorest –poor’ populations really quadruple?