DEPARTMENT OF SOCIAL POLICY AND SOCIAL WORK

UNIVERSITY OF OXFORD

‘Old Europe’ – pensions, taxes and alternatives

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Population ageing: an unavoidable destiny

Population ageing good for young populations.

Older population structure here to stay – an irrevocable feature of mature society.

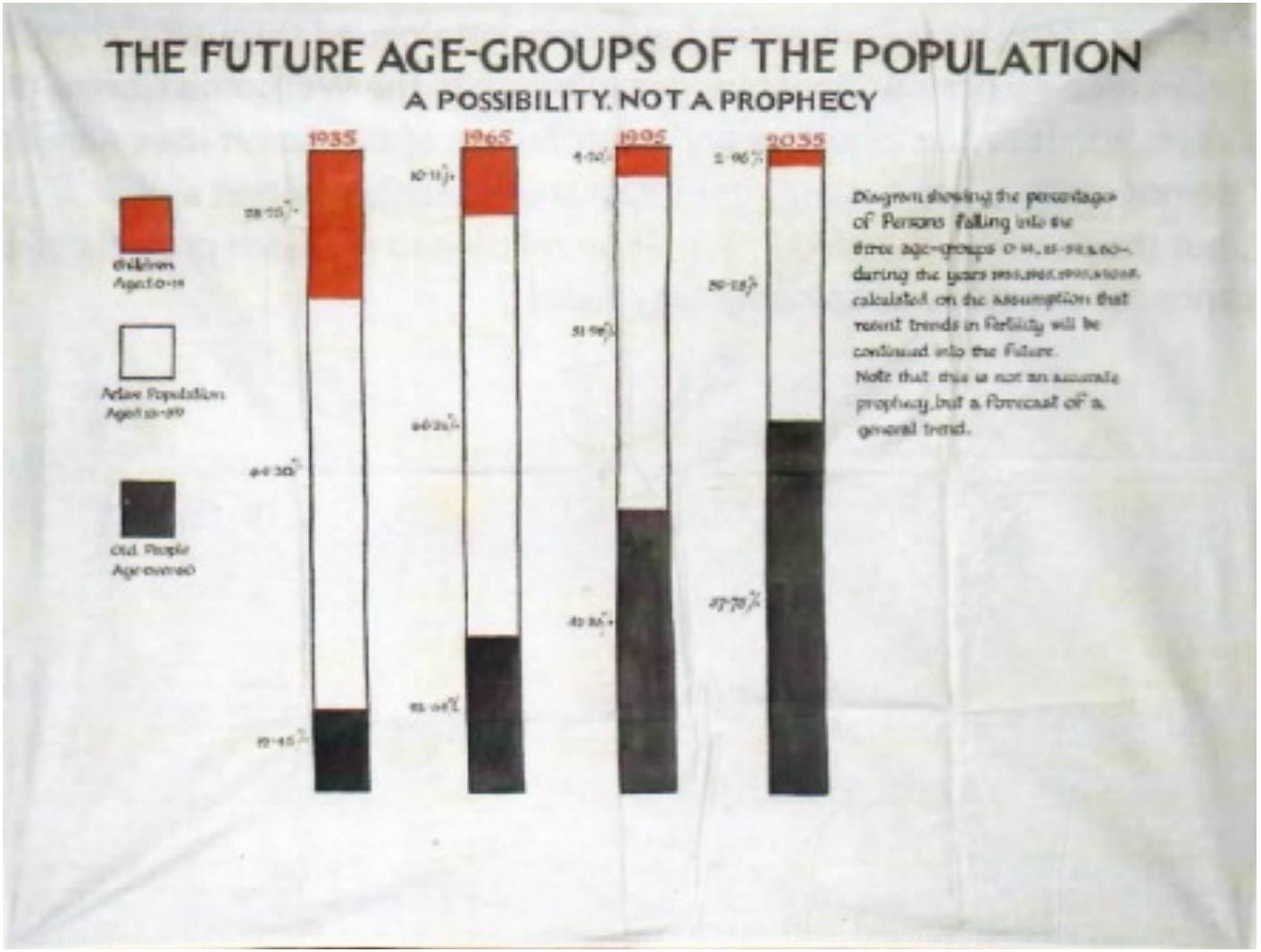
A consequence of beneficial reductions in death and birth rates.

A sustainable youthful population would require a return to high birth and death rates.

Population age-structures will eventually stabilize, given constant vital rates (i.e. ageing does not get worse and worse).

However longer life means even older populations, but changes meaning of 'old age'.

A warning from the 1930s. Source: Population Investigation Committee 1936 'The Future of Our Population?'.



Population structure *circa* 1700 at the then lowest possible level of mortality. Best kept in the past.

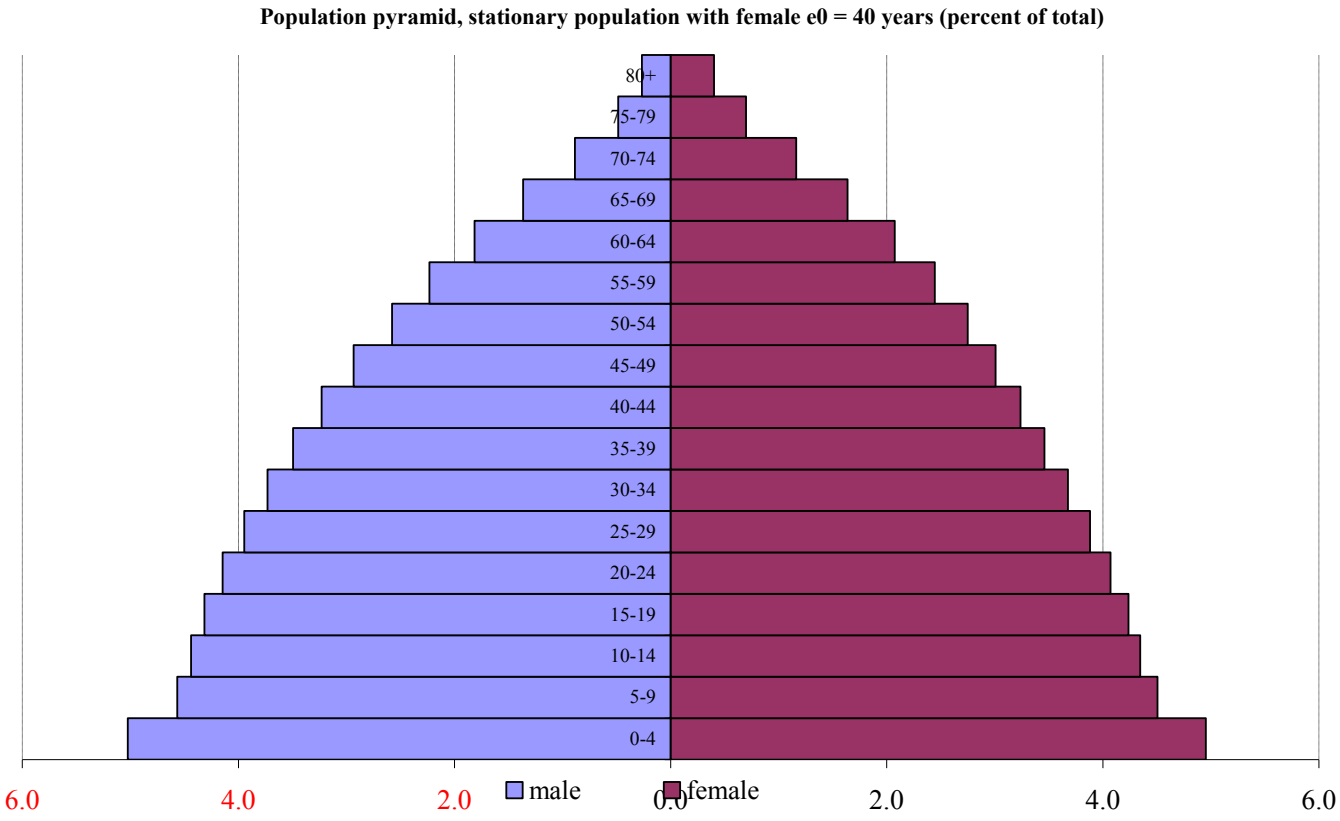
Expectation of life at birth male 37 years, female 40 years.

Infant mortality = 193 infant deaths per 1000 live births.

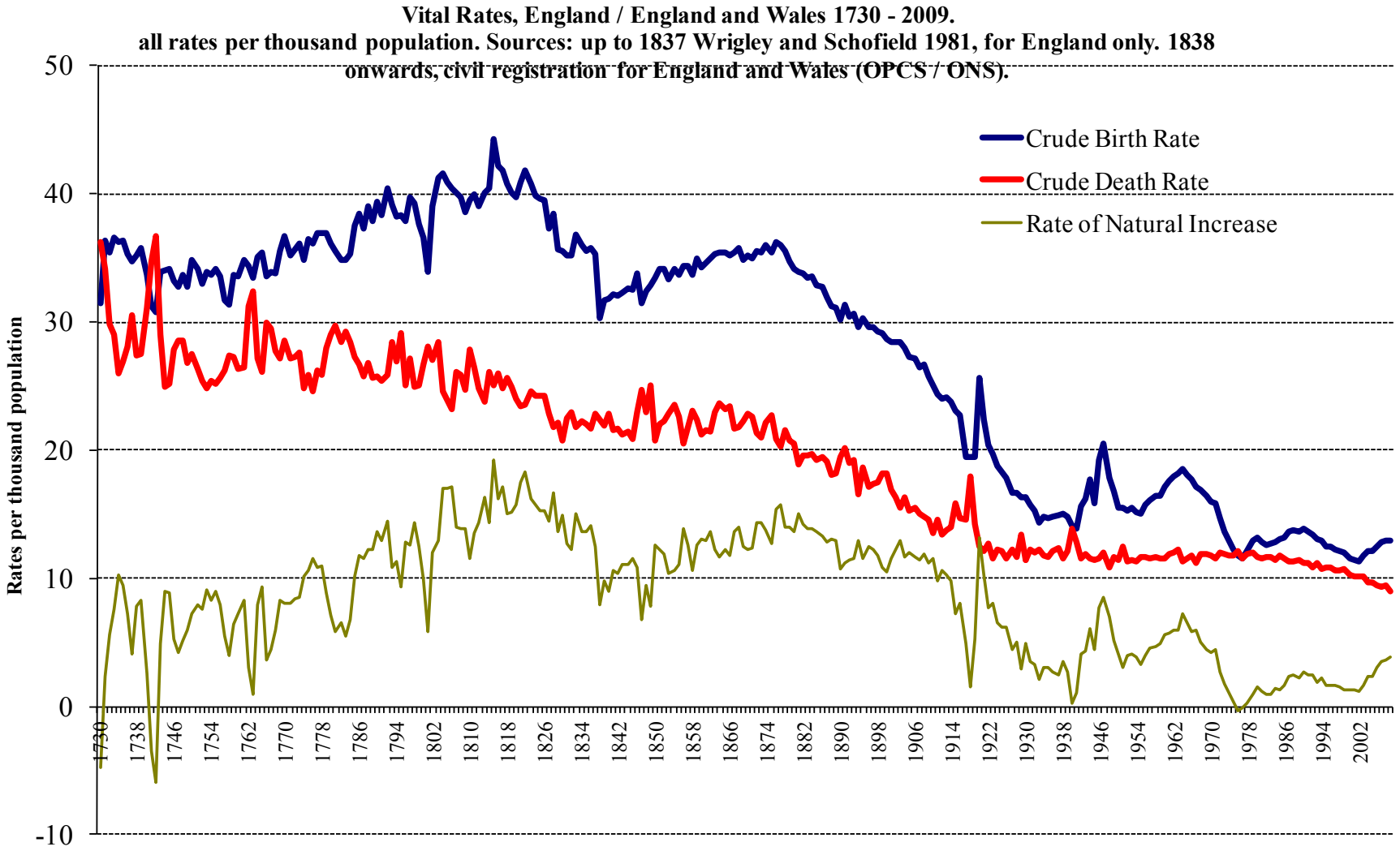
Population aged under 15 years 28%; population aged 65 and over 7%.

Growth rate zero.

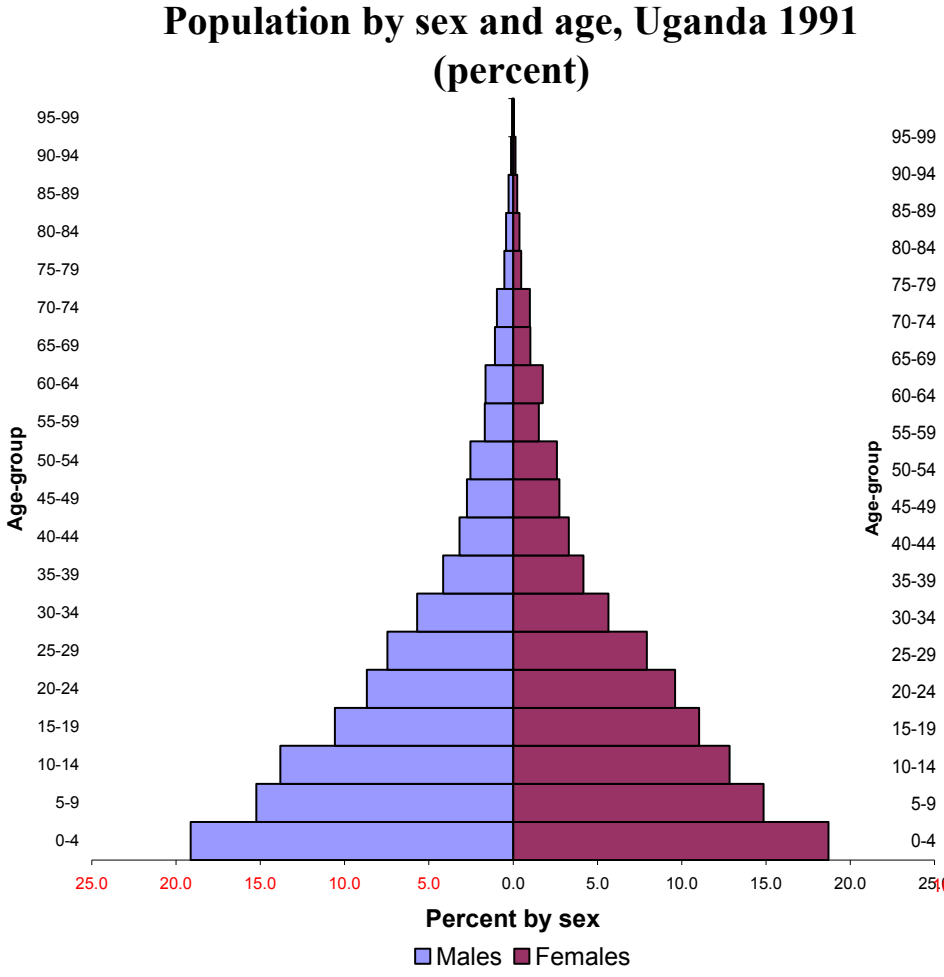
Source: Coale and Demeny West Level 9 model life table.

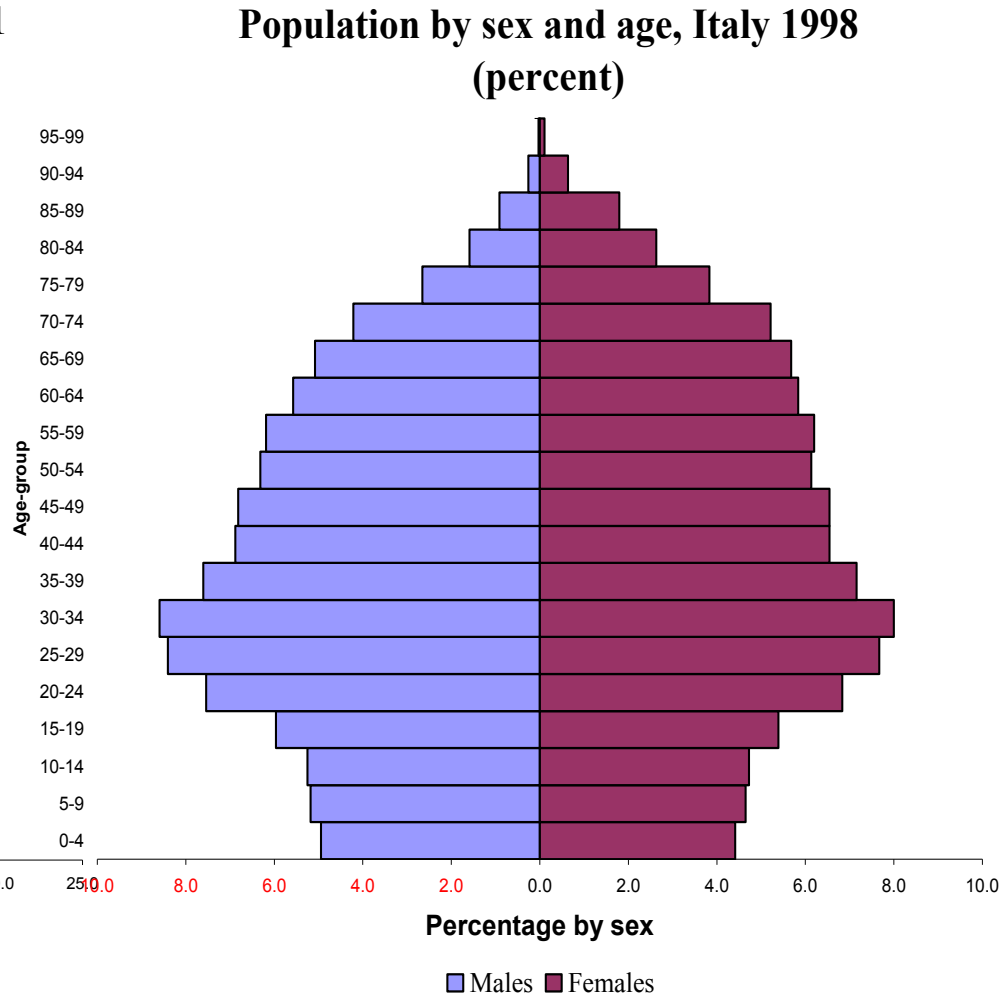


The demographic transition in England and Wales 1730 – 2009. Sources: England up to 1836 Wrigley and Schofield 1981 ; England and Wales from 1837 ONS.



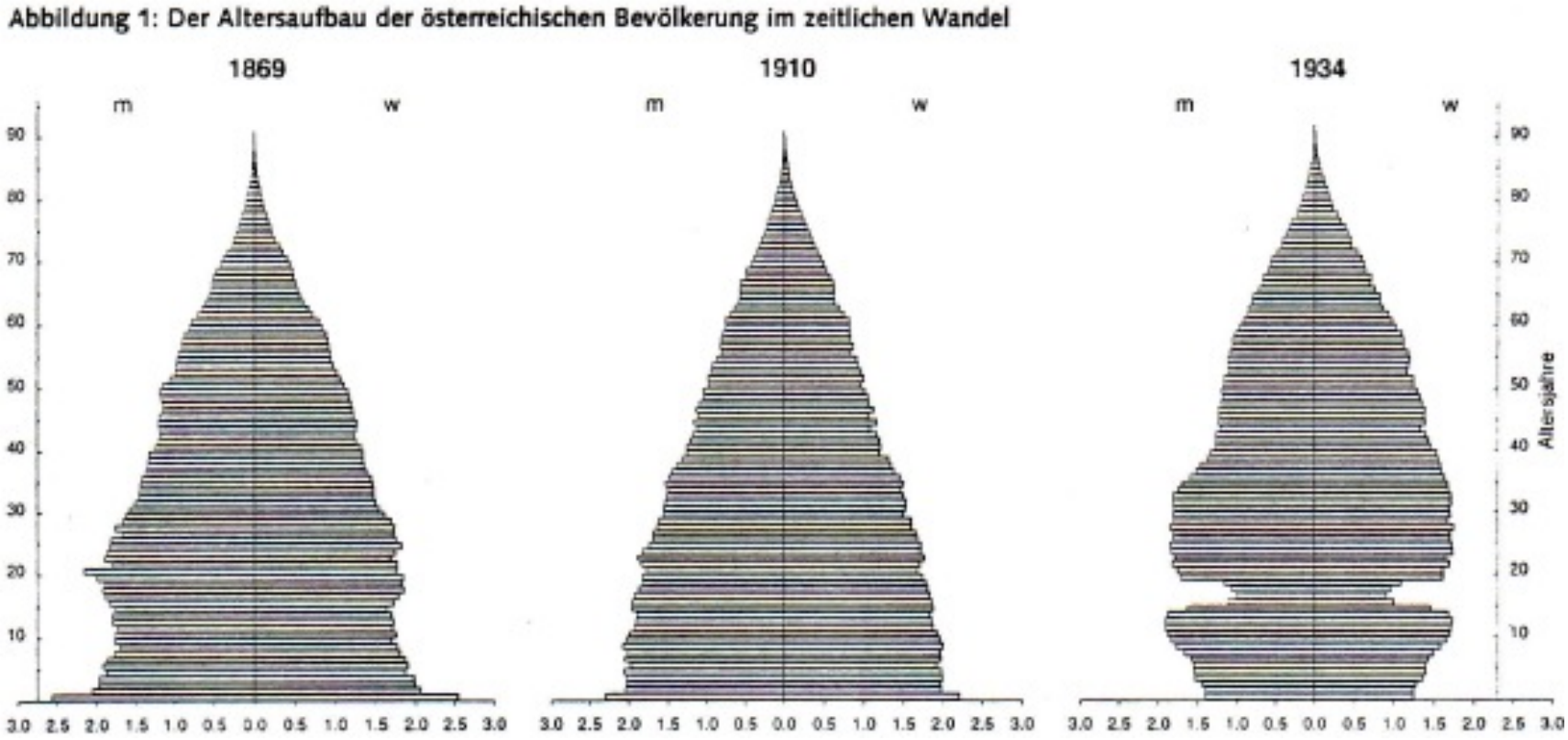
Examples of youthful, and ageing, populations (one showing positive momentum; the other negative).



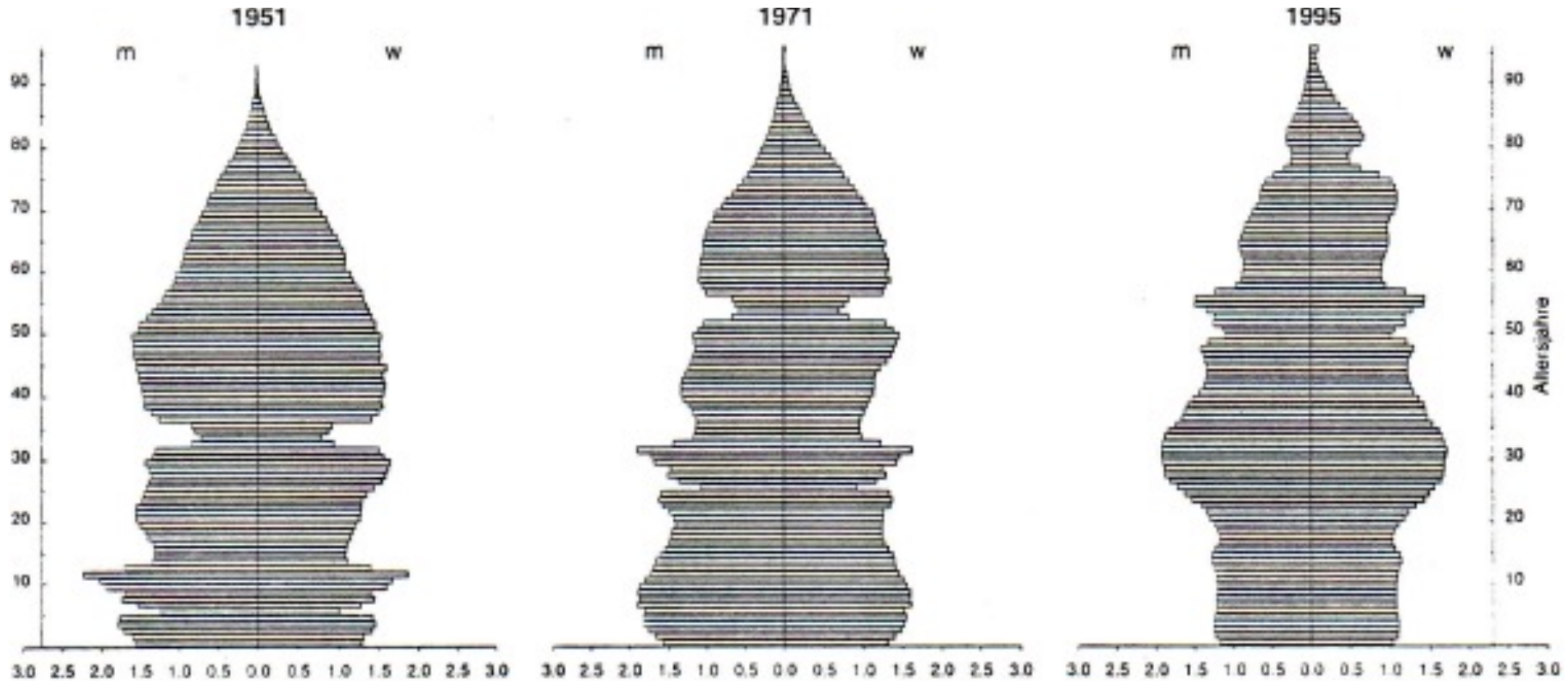


Evolution of a new age-structure in Austria 1: 1869 – 1934.

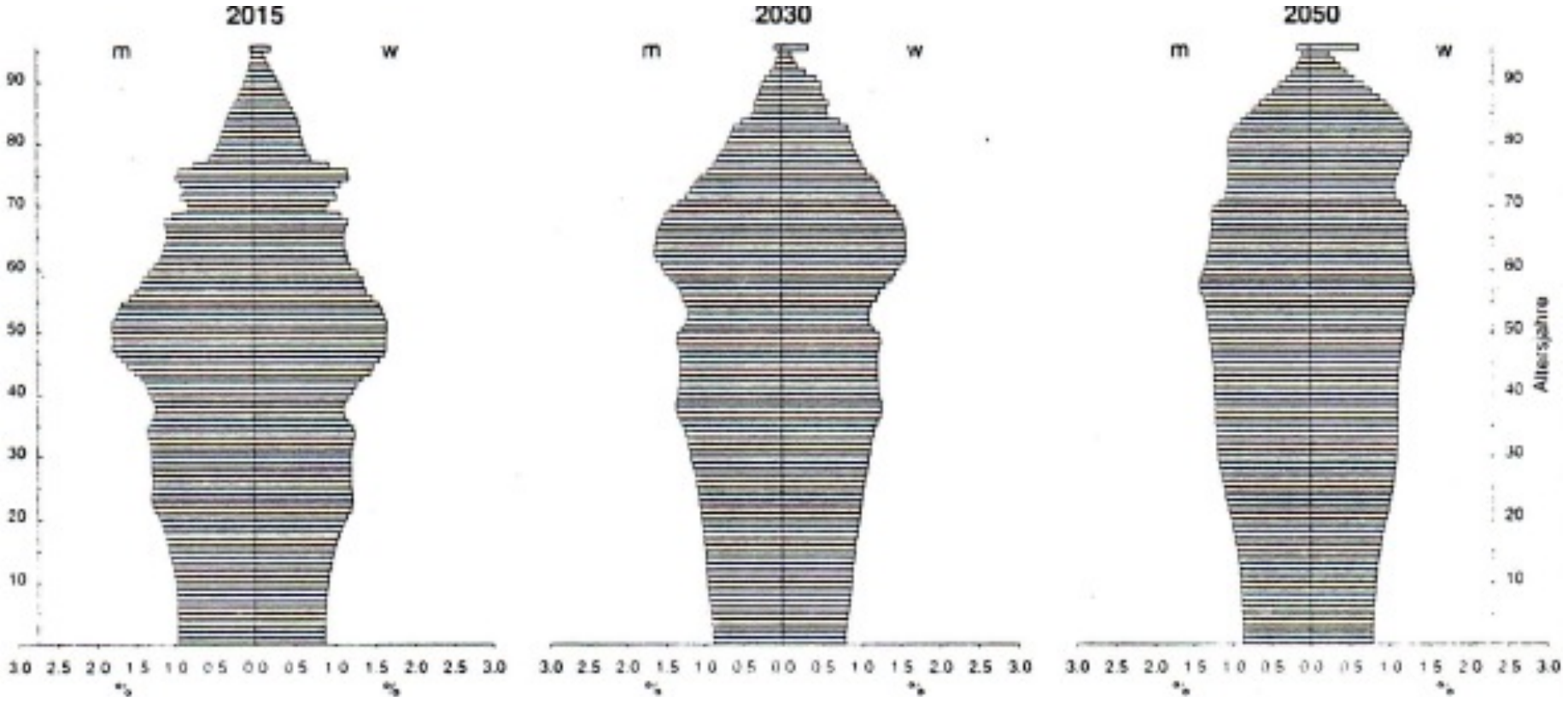
Source: Demografische Informationen 1995/6 page 109.



Evolution of a new age-structure in Austria 2: 1951 – 1995.

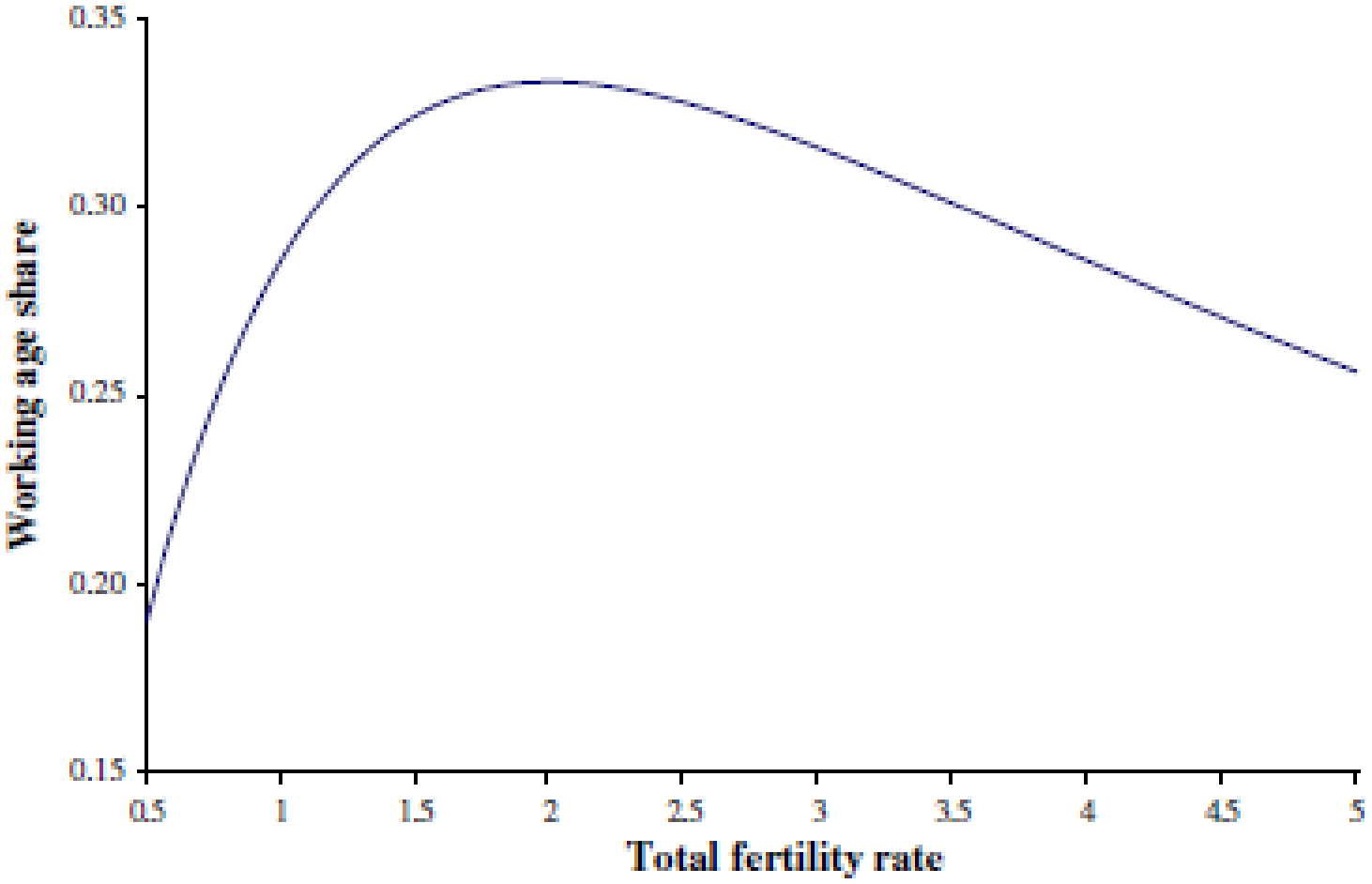


Evolution of a new age-structure Austria 3: 2015 – 2050.



Theoretical relationship between proportion of population of working age and total fertility.

Source: Bloom, Canning et al. 2010 Figure 3.

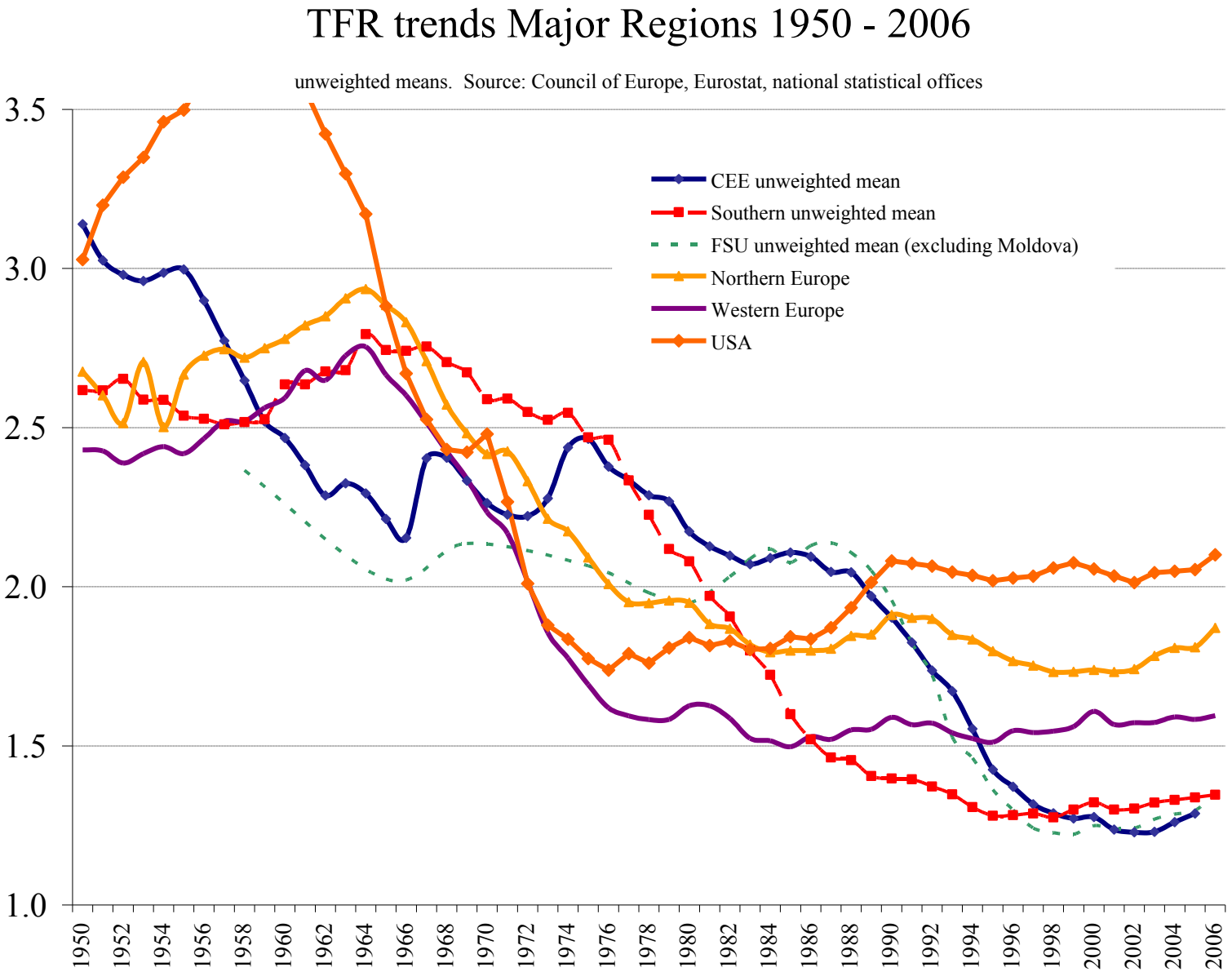


Causes of population ageing

Lower fertility (‘ageing from the bottom’). Always makes populations older. The main force behind population ageing during the demographic transition. In developed societies now giving way to effects of:

Lower mortality (‘ageing from the top’). Makes populations YOUNGER when death rates are high, OLDER only when death rates are low.

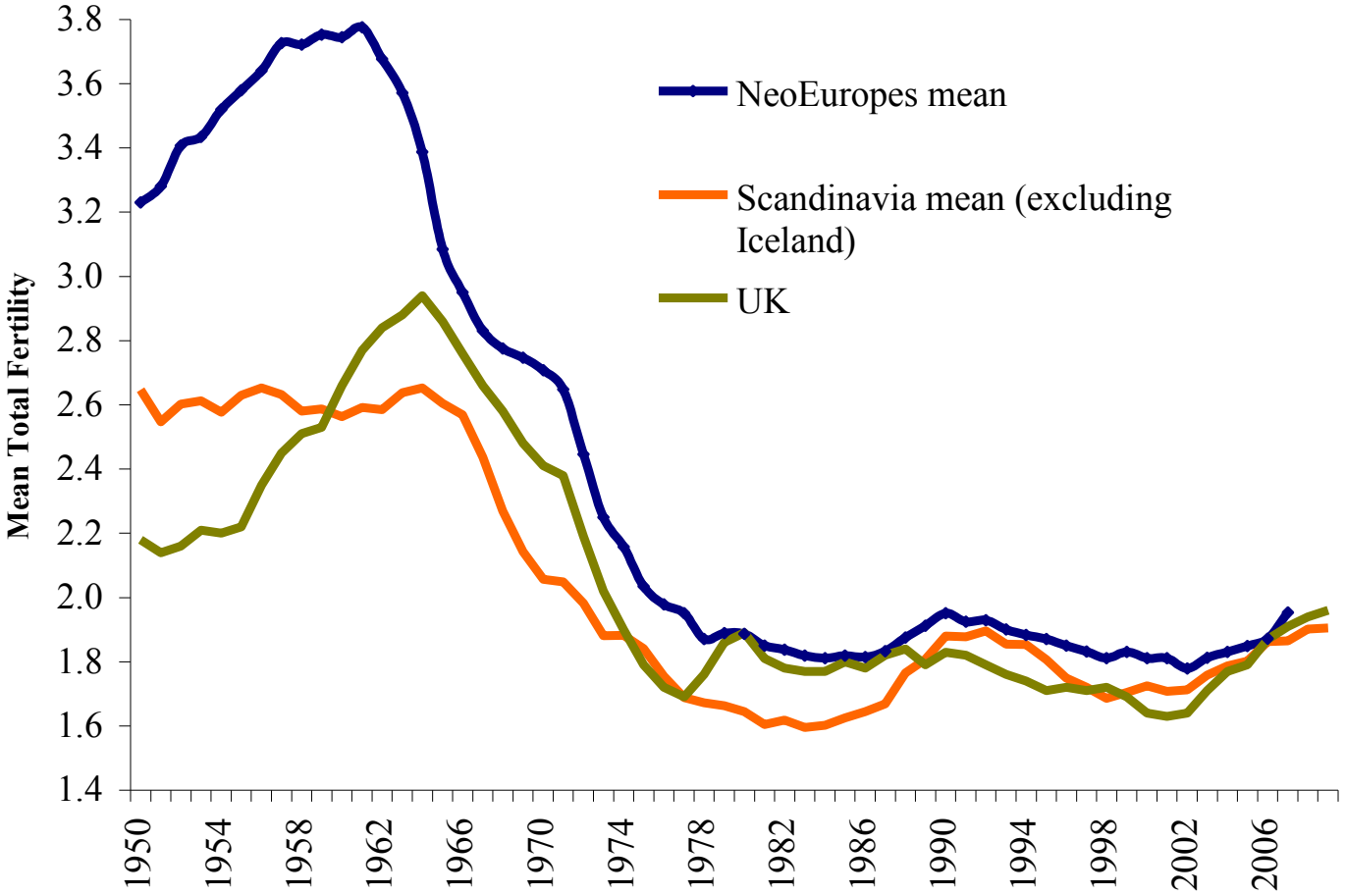
Total Fertility trends



TFR trends UK and comparable countries 1950 - 2009

Total Fertility trends, UK, Northern Europe and 'Neo-Europes' 1950 - 2009 (unweighted means)

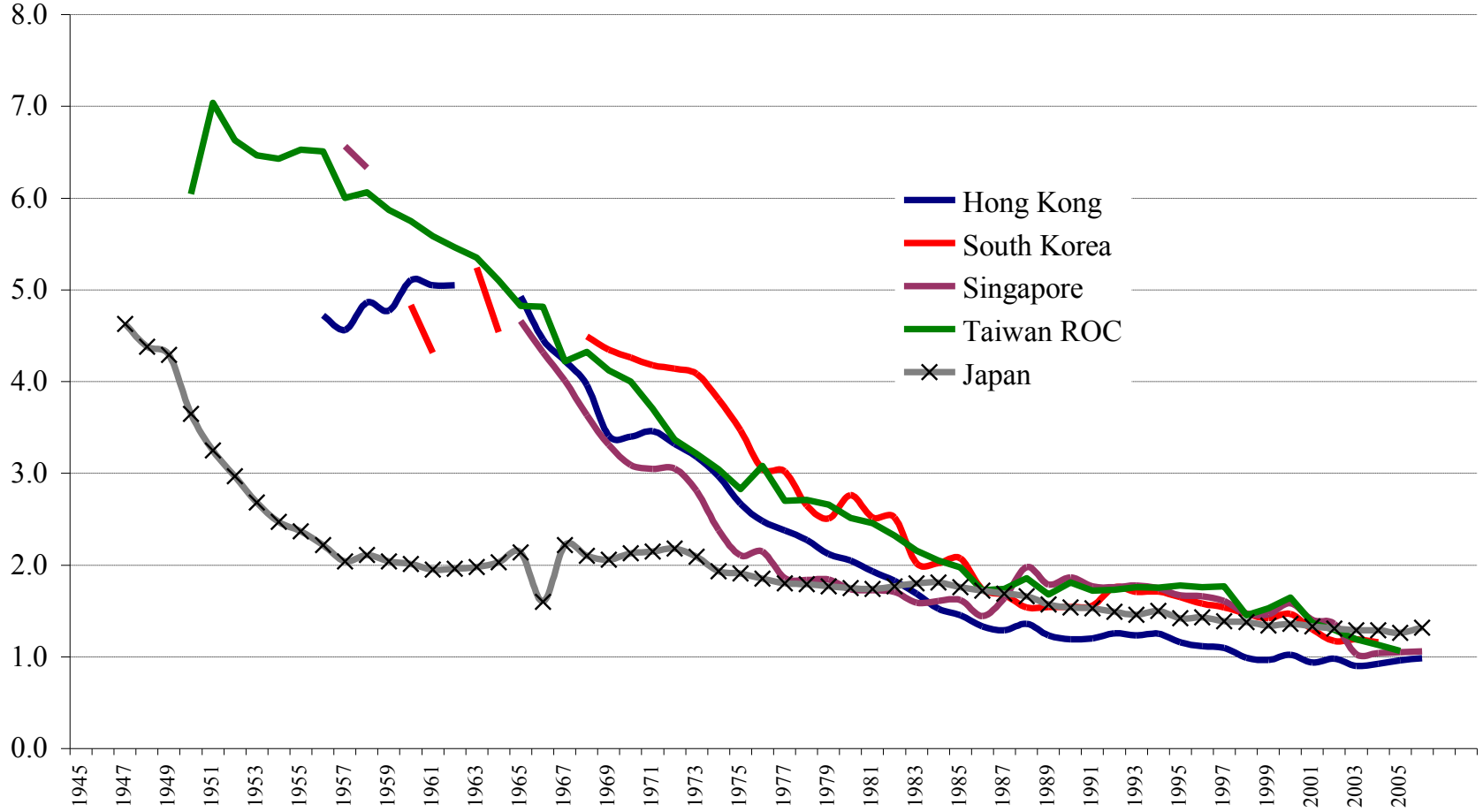
Sources: Council of Europe, Eurostat and National Statistical Yearbooks



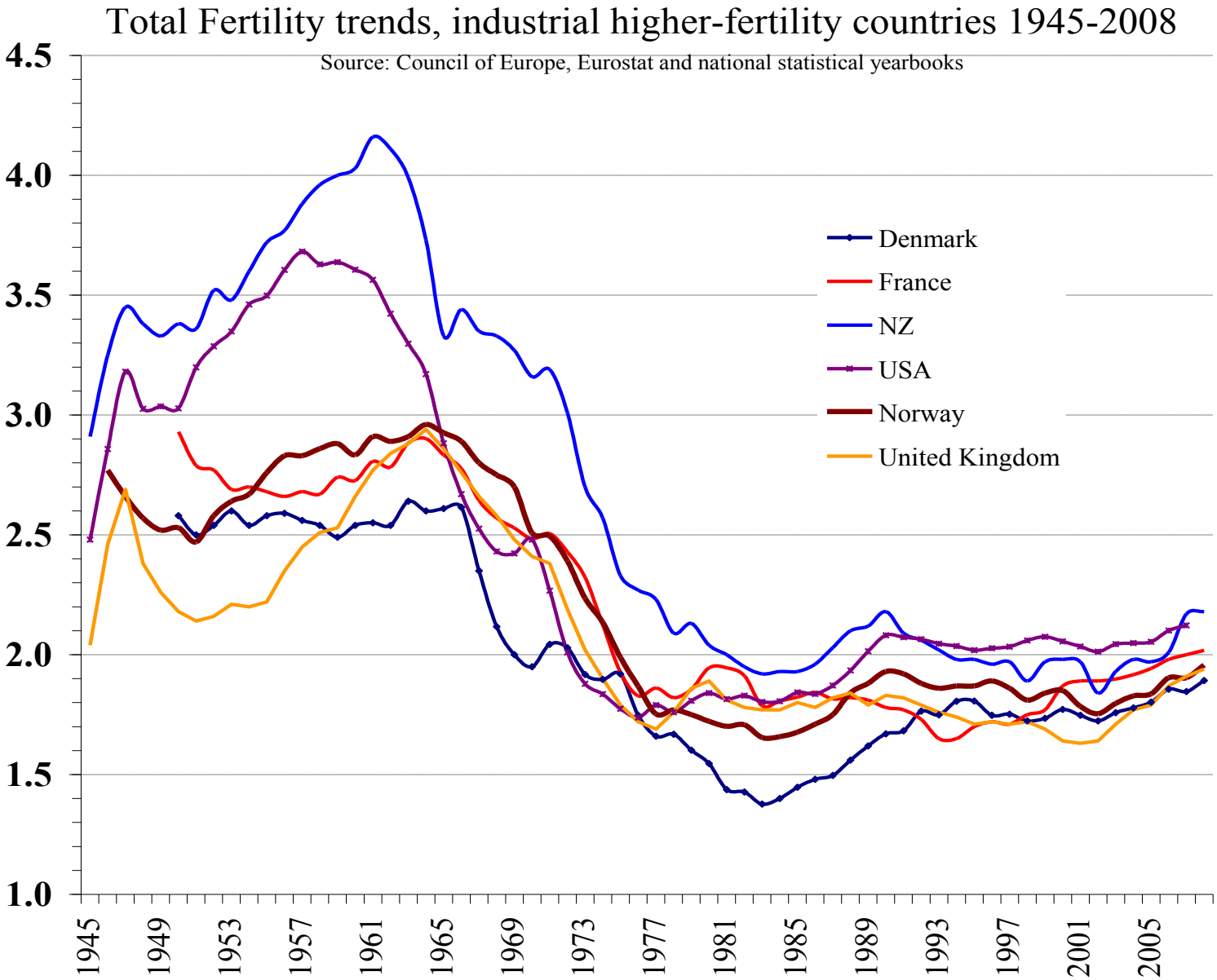
An uncertain future: ‘lowest-low’ fertility in the Far East

Total fertility trends, Japan and the Far East 'little dragons' to 2006

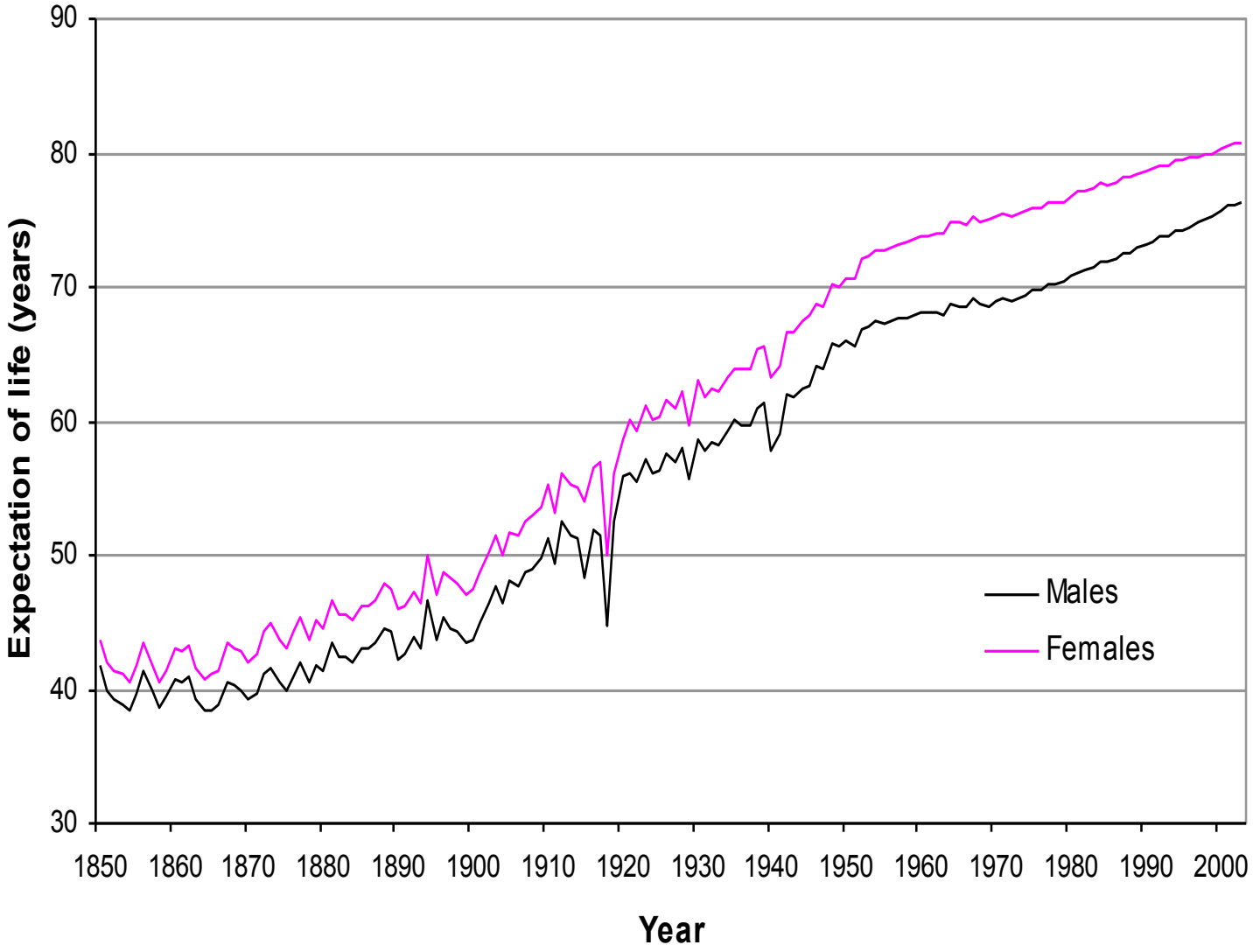
Source: national statistical offices.



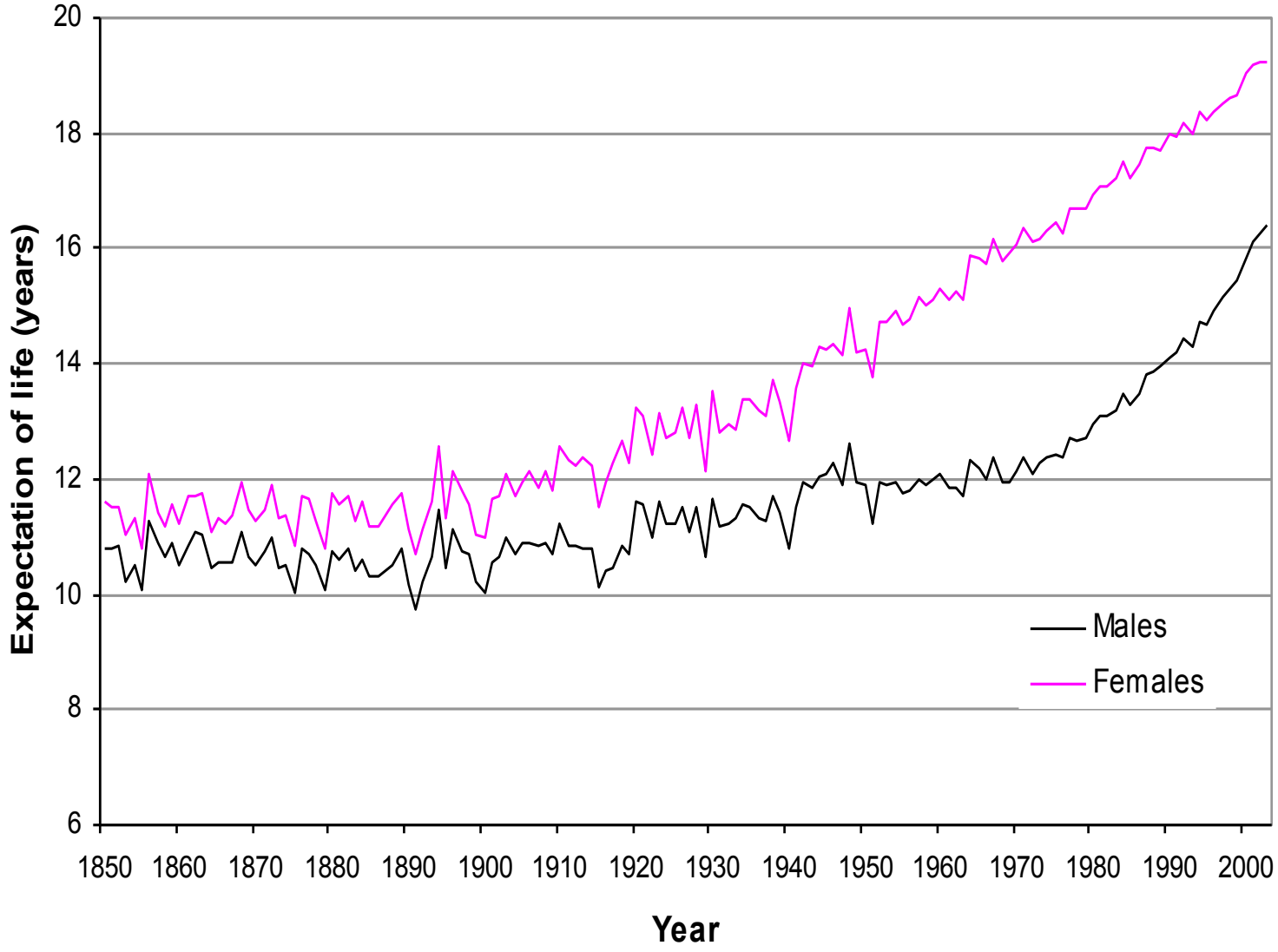
Birth rates can go up….



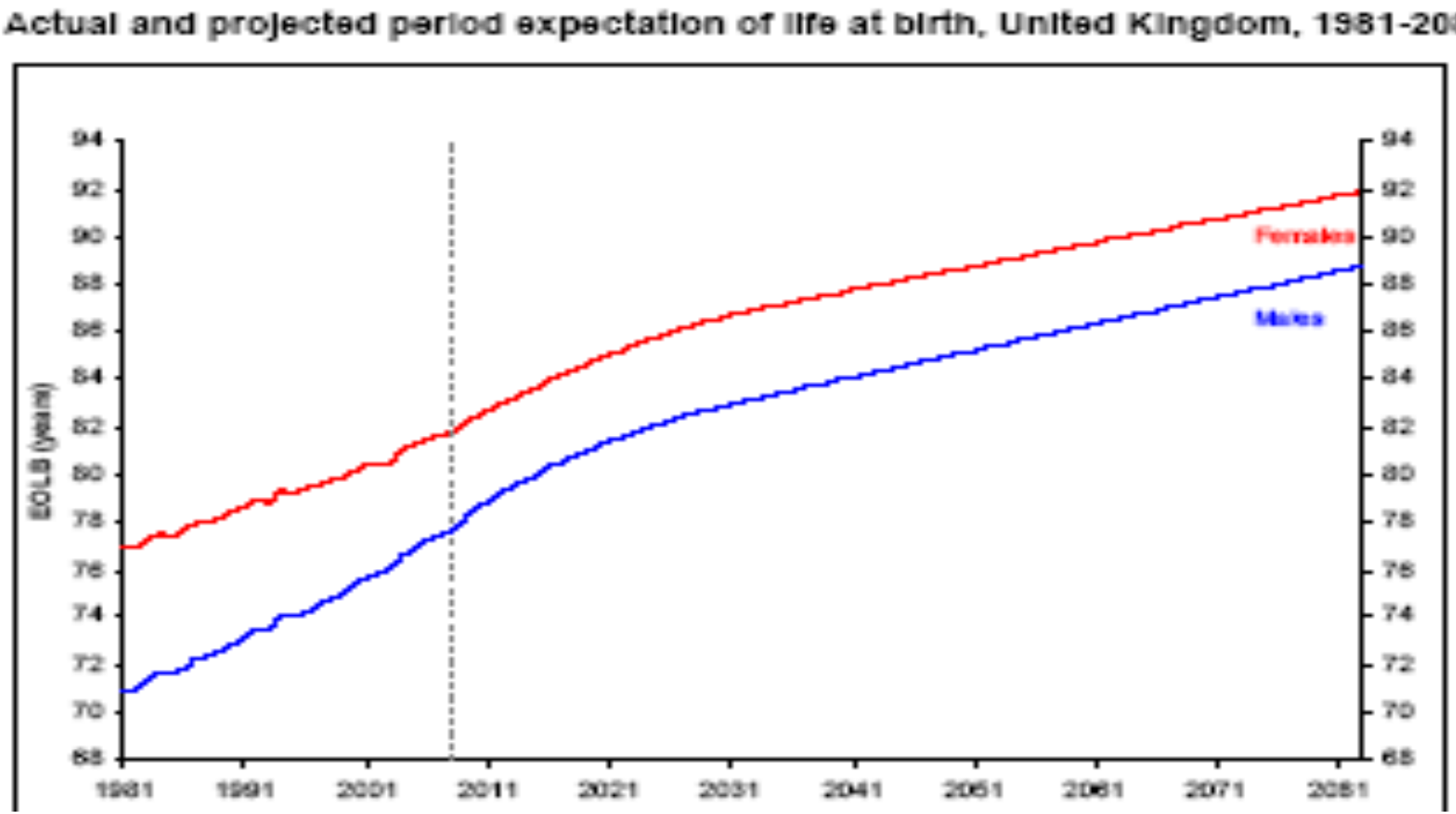
Period expectation of life at birth 1850 - 2000, E&W. Source: ONS.



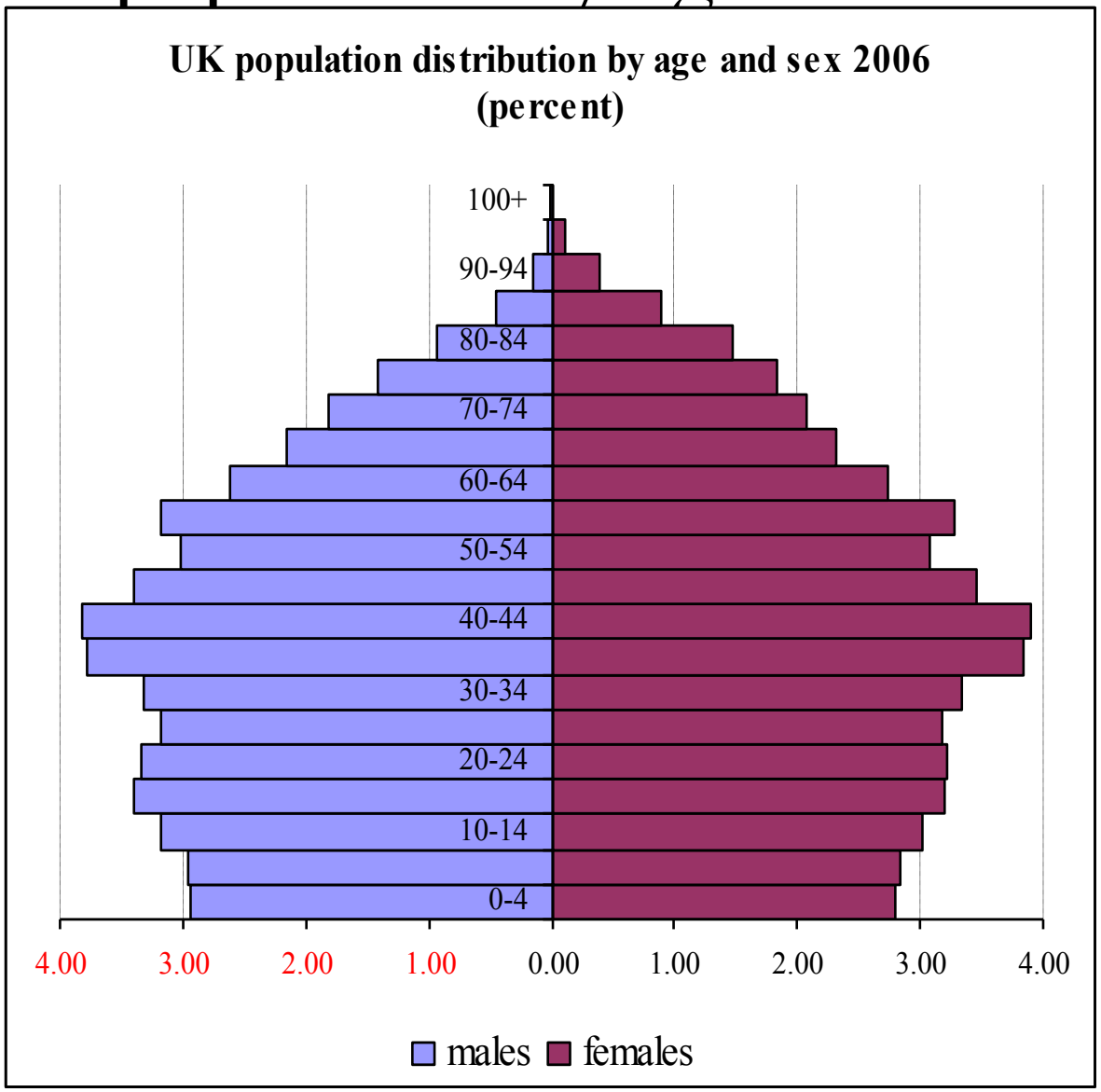
Period expectation of life at age 65, 1850 – 2000, E&W.

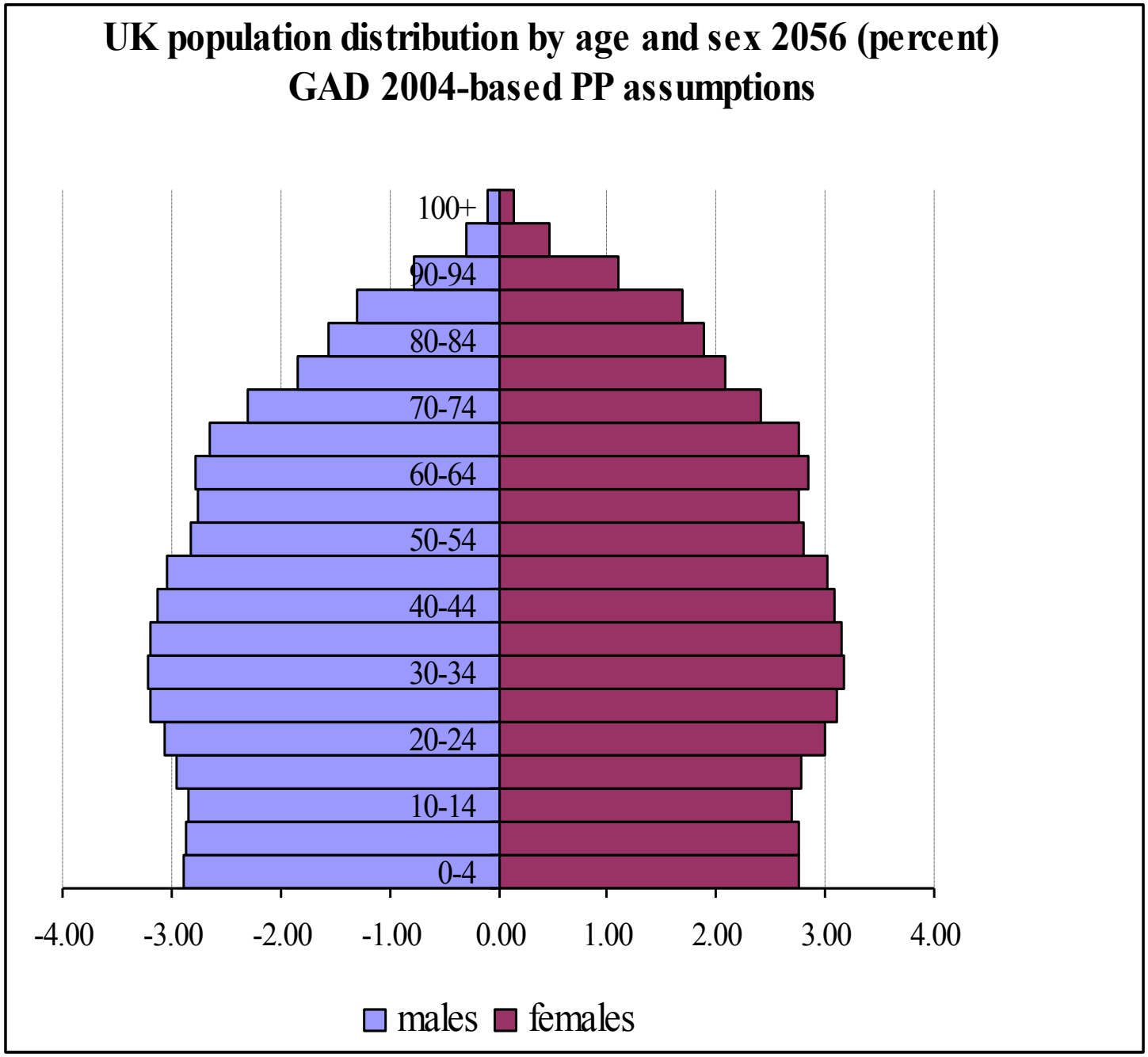


Actual and projected expectation of life at birth, UK 1981 – 2083. Source: ONS 2009.



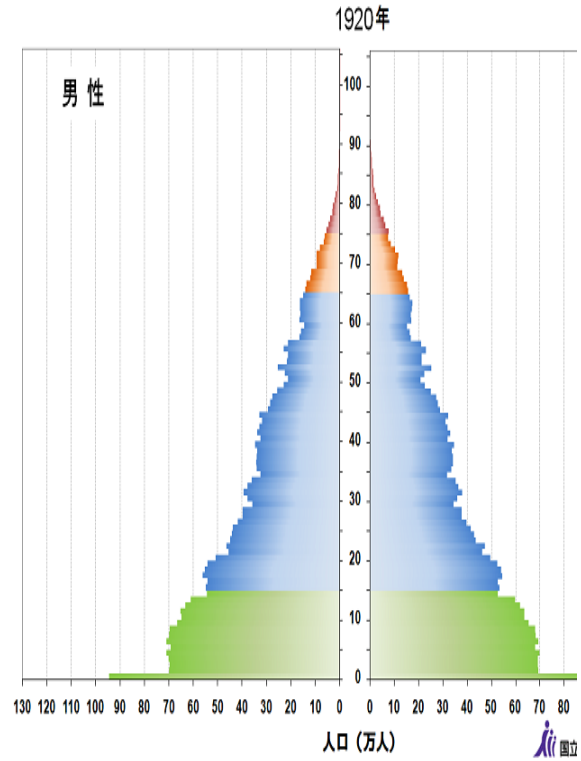
UK population by age and sex 2006

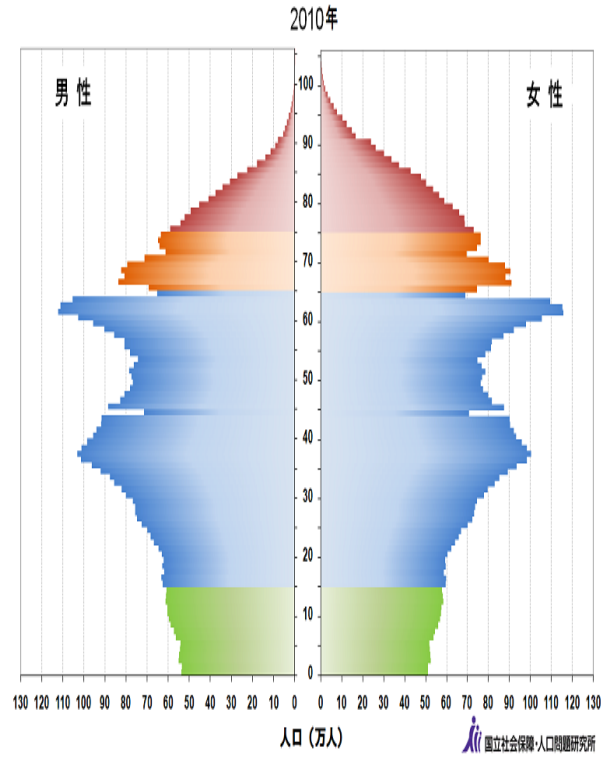


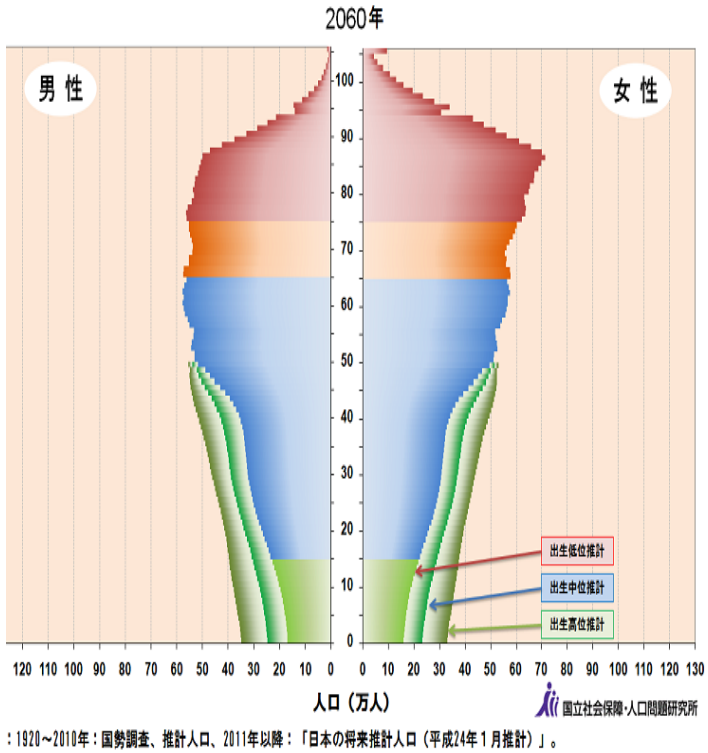

UK population distribution by age and sex 2056 (percent)
GAD 2004-based PP assumptions
100+
90-94
80-84
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
males
females

A worse case: Japan 1920, 2010, 2060.

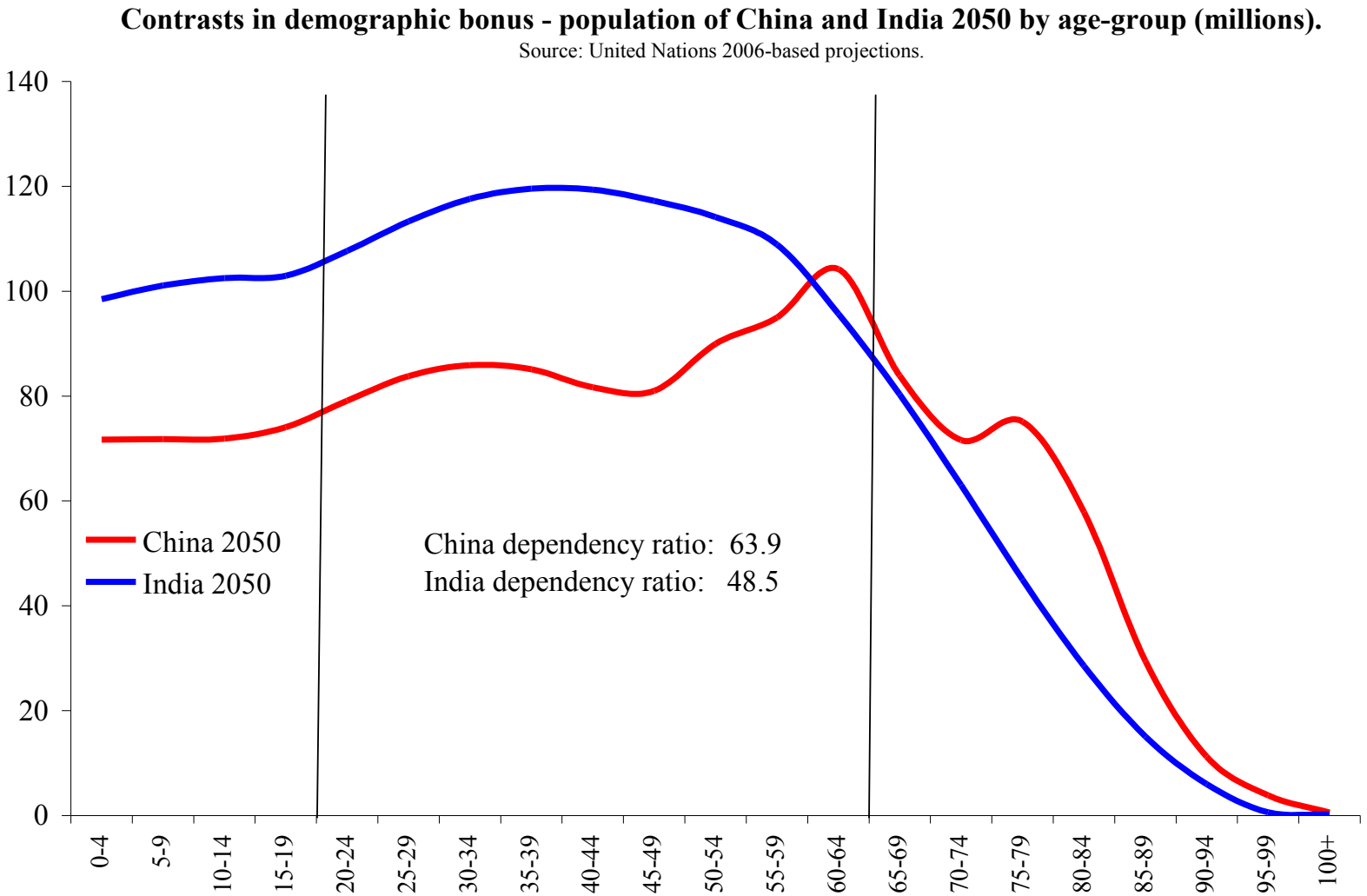
source http://www.ipss.go.jp/pp-newest/e/ppfj02/suikei_g_e.html
http://www.ipss.go.jp/site-ad/TopPageData/2010.png







From ‘bonus’ to ‘onus’: India and China in 2050. Source: United Nations.



Problematic aspects of population ageing

Lower birth and death rates increase the aged dependency ratio, only partly relieved by lighter youth dependency ratio.

Generally adverse effects on economic production/ consumption balance.

Specific problems: labour shortage, possible inflation, care arrangements for elderly, adequacy of pension provisions (last affected by longer life alone, even with constant birth rate)

Demographic dependency ratios

are based upon the ratios of the population of nominal dependent ages to the population of nominal economically active age (irrespective of level of workforce participation). Conventional age-groups are 0-14, 15-64 and 65+. More realistically, as used by Eurostat, the conventional age-groups are 0-19, 20-59 and 60+.

Total Dependency Ratio :

$$\frac{\text{Total Dependent Population}}{\text{per 100 Active Population}} = \frac{\text{pop 0-14 + pop 65 and over}}{\text{pop 15 - 64}} * 100$$

The youth and aged components of dependency can differ substantially and are often calculated separately.

Youth Dependency Ratio:

$$\frac{\text{Youth Dependent Population}}{\text{per 100 Active Population}} = \frac{\text{pop 0-14}}{\text{pop 15 - 64}} * 100$$

Aged Dependency Ratio:

$$\frac{\text{Aged Dependent Population}}{\text{per 100 Active Population}} = \frac{\text{pop 65 and over}}{\text{pop 15 - 64}} * 100$$

The Potential Support Ratio

is the reciprocal of the Dependency Ratio and indicates the number of persons in the nominally active population per dependent. In view of concerns about population ageing, it is most often encountered in the form of the Aged Potential Support Ratio, the number of active persons aged 15-64 per aged dependent aged 65 and over. e.g:

	Yemen 2000	UK 2000	Italy 2025	Italy 2050
Population 0-14	48.3	18.9	11.4	12.4
Population 15-64	49.4	65.3	63.0	48.1
Population 65 and over	2.3	15.8	25.6	35.7
Overall Dependency Ratio	102.4	53.1	58.7	107.8
Youth Dependency Ratio	97.8	28.0	18.1	25.8
Aged Dependency ratio	4.7	24.2	40.6	74.2
Aged Potential Support Ratio	21.4	4.1	2.5	1.4

Longer life after retiring age

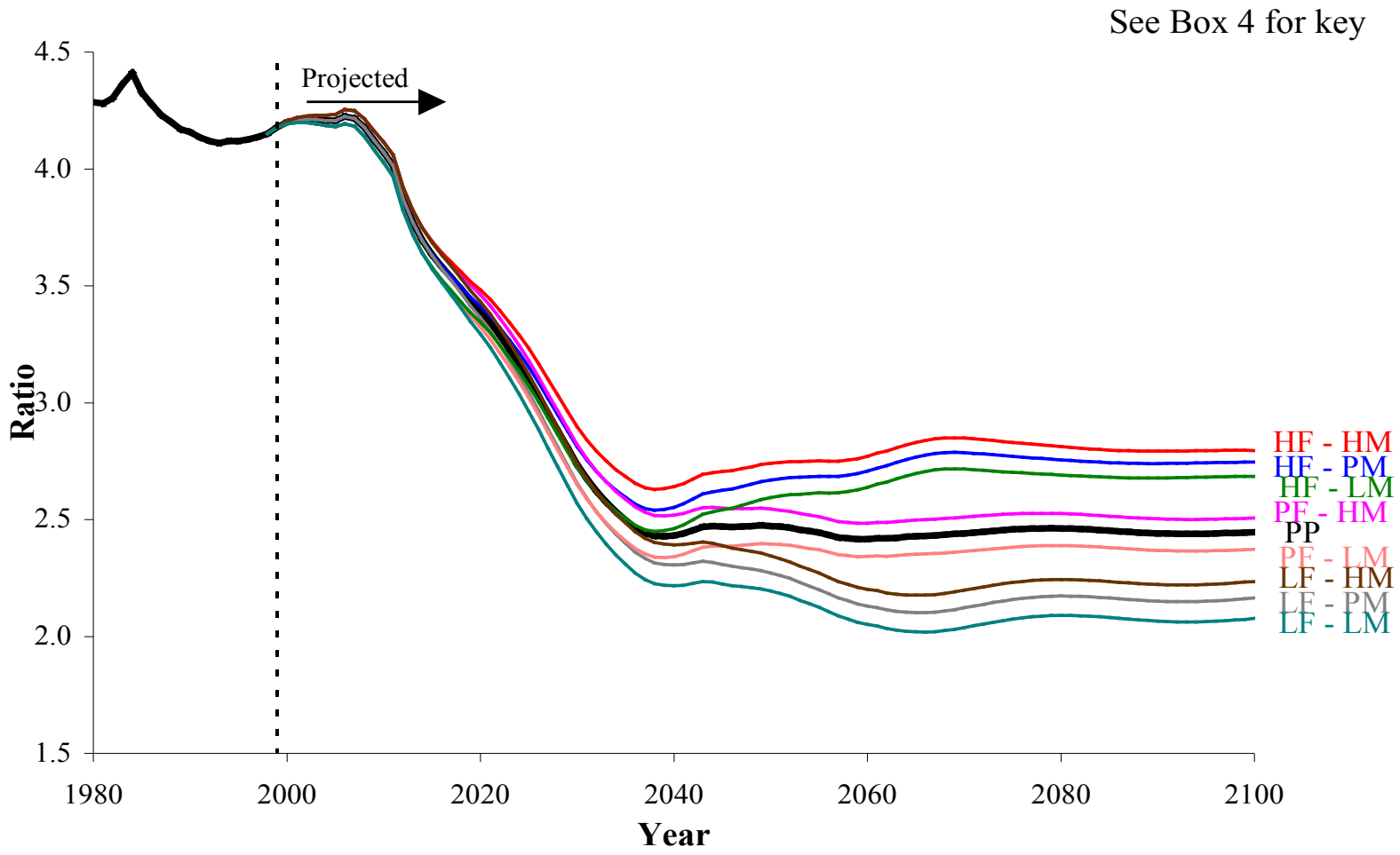
Projected expectation of life 2004 based projections
United Kingdom

	at birth		age 65	
	males	females	males	females
2002-03	76.8	81.3	16.8	19.6
2011-12	78.6	82.5	18.3	20.7
2021-22	80.3	84.2	19.8	22.1
2031-32	81.4	85.3	20.6	23.0

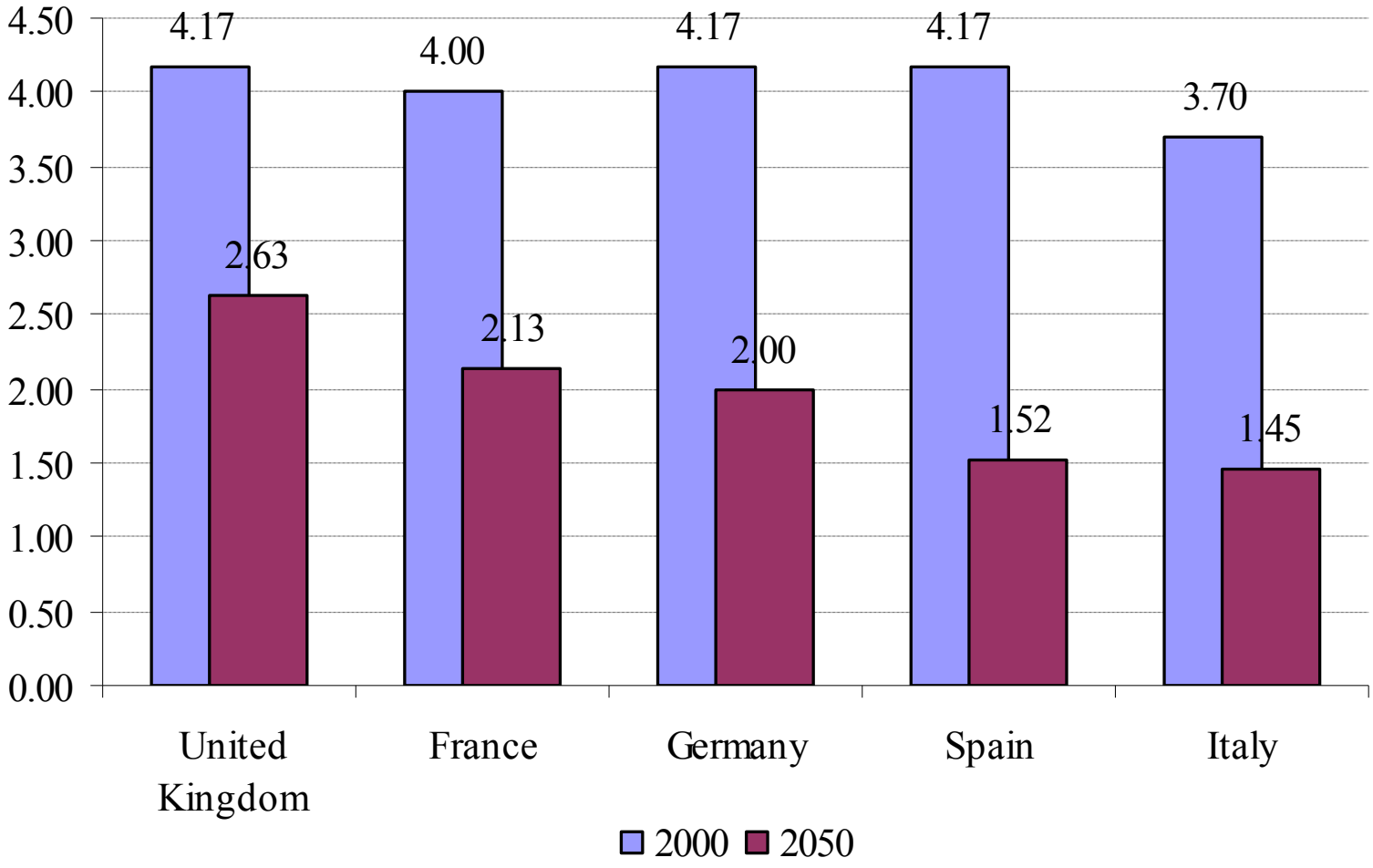
Potential Support Ratio, UK 1980-2100

GAD PP 1998-based. *Population Trends 103*

Figure 7 Ratio of persons aged 15-64 to those aged 65 and over, United Kingdom, 1980-2100

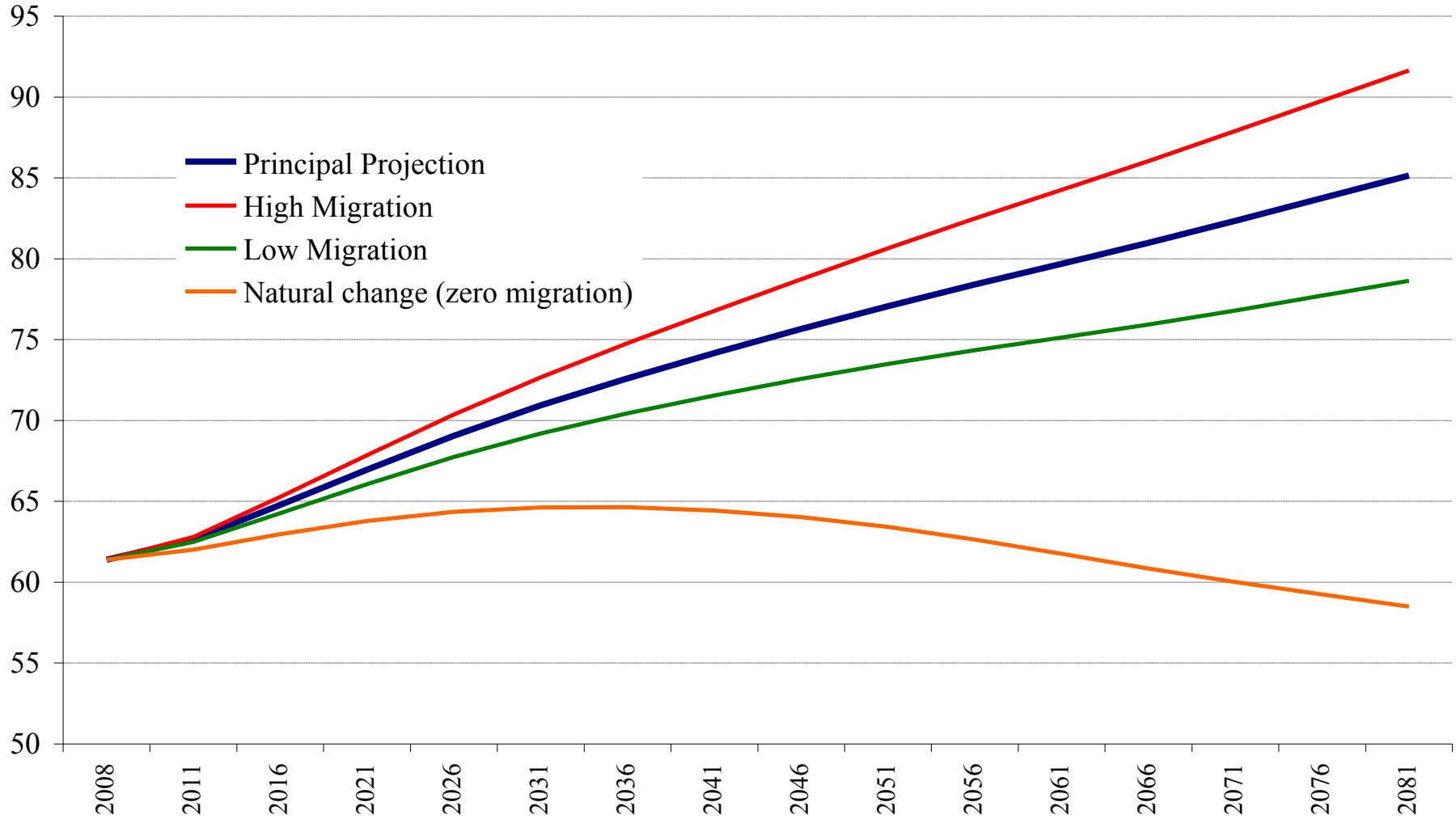


Aged potential support ratio, selected countries 2000 and 2050. Source: UN 2004 medium variant.



UK population – rapid growth but still ageing

Population projection, United Kingdom 2008 - 2081 (millions). Principal Projection and variants. **Source: ONS 2009.**



Immigration as demographic salvation

Do we need to be saved? Why should ‘no decline’ targets be met (UN 2000)? Is zero growth or decline axiomatically undesirable?

Immigration can keep population, or workforce size, approximately constant.

But that can require very large inflows; and adjustment difficult.

Immigration can 'solve' population ageing only with huge population increases.

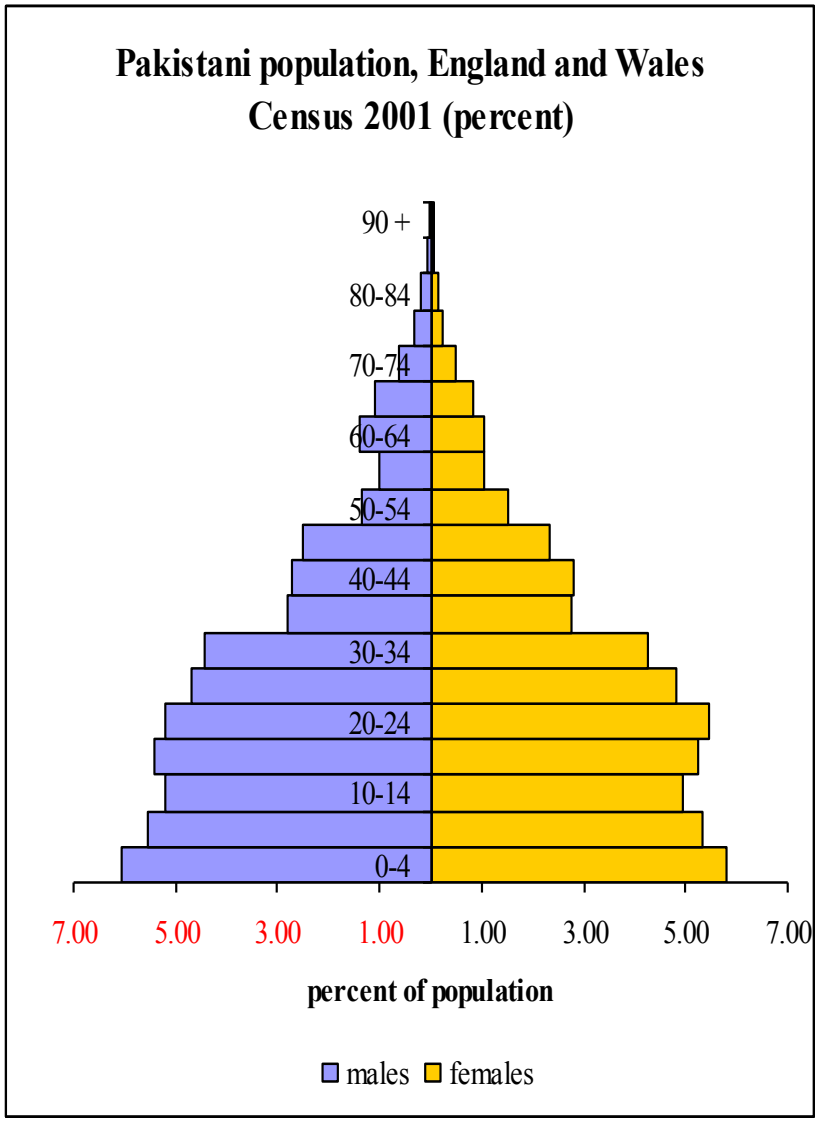
Given sub-replacement fertility, migration to maintain constant size must eventually replace original population with immigrant population. Does a society ‘save’ itself that way?

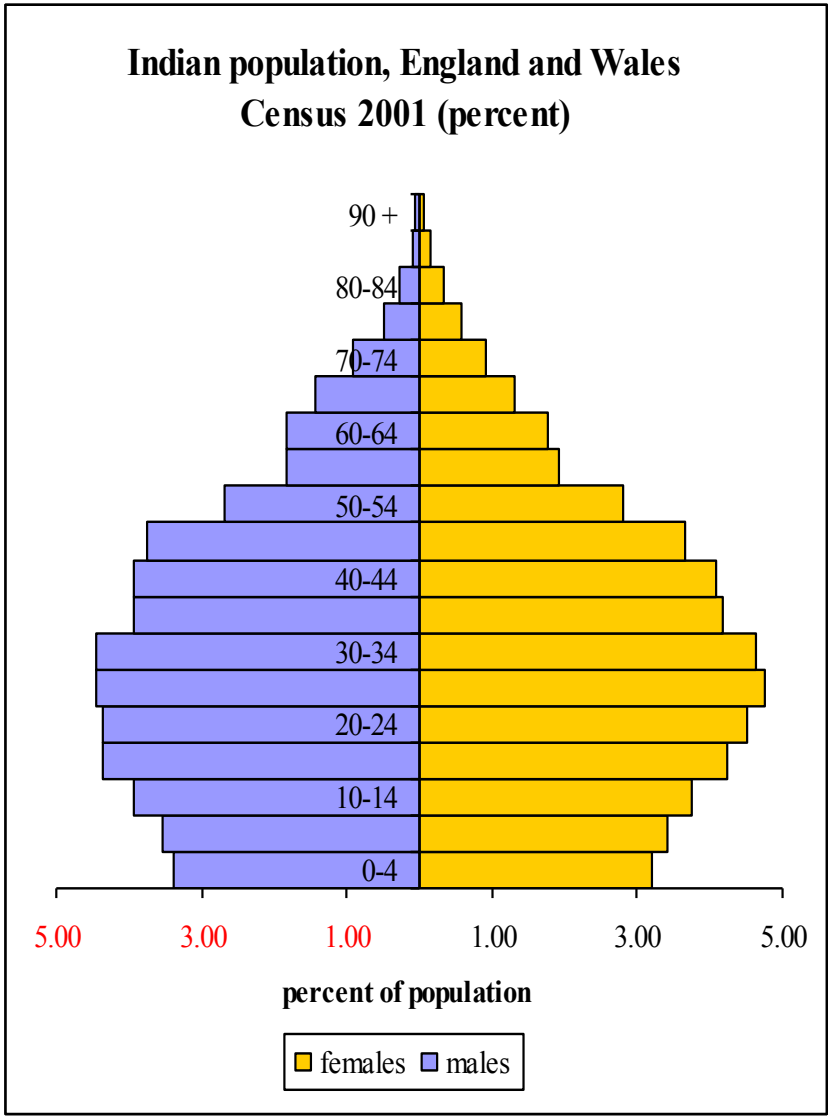
‘Economism’ and ‘Demographism’ tend to ignore environmental and social problems of immigration and population growth.

Potential effect of migration upon age-structure.

Source Eurostat 2011 Statistics in Focus 1/2011

Figure 1: Age structure of the population on 1 January 2009 and of immigrants in 2008, EU-27

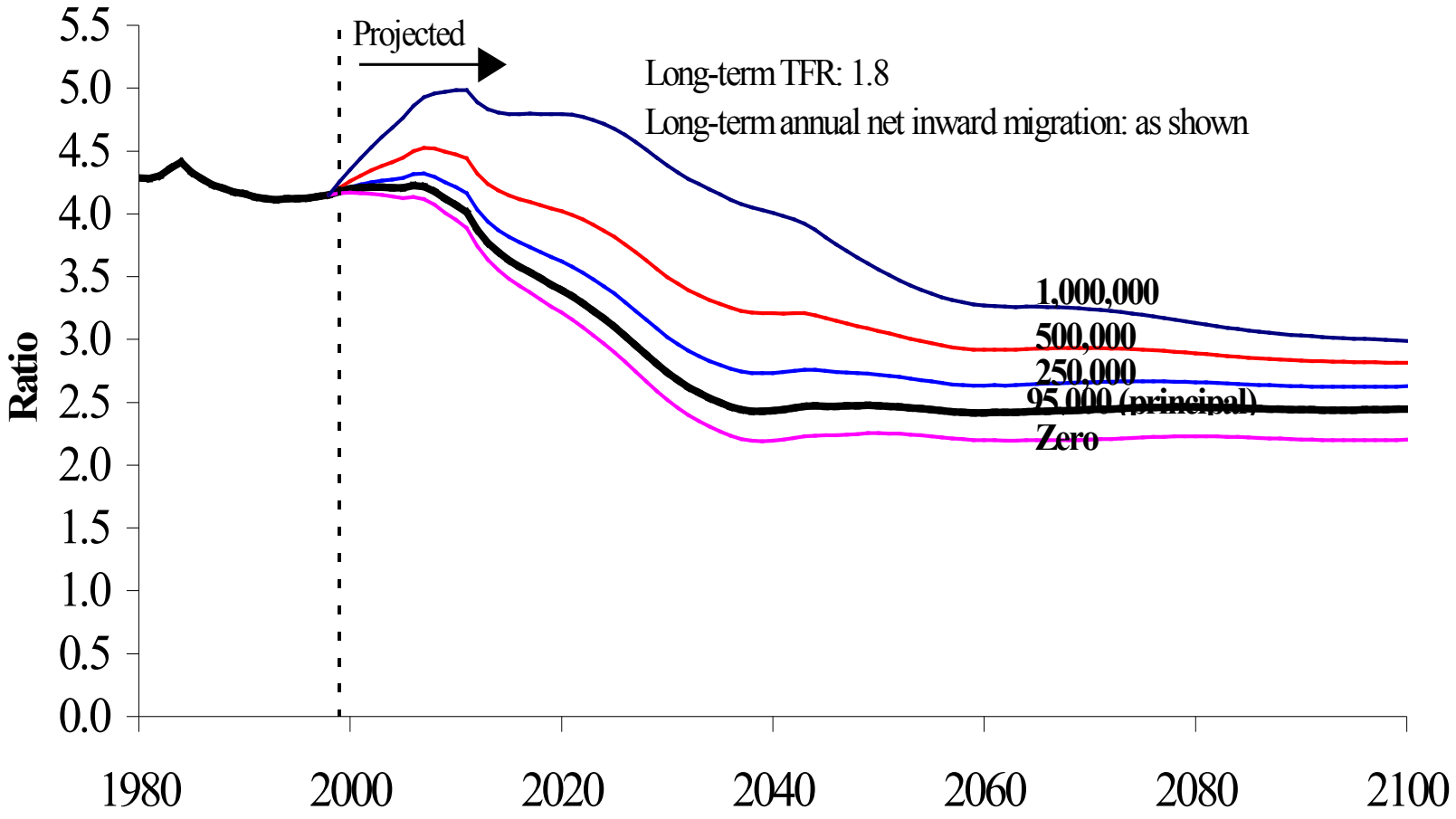

Pakistani population, England and Wales
Census 2001 (percent)
90 +
80-84
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
7.00
5.00
3.00
1.00
1.00
3.00
5.00
7.00
percent of population
males
females

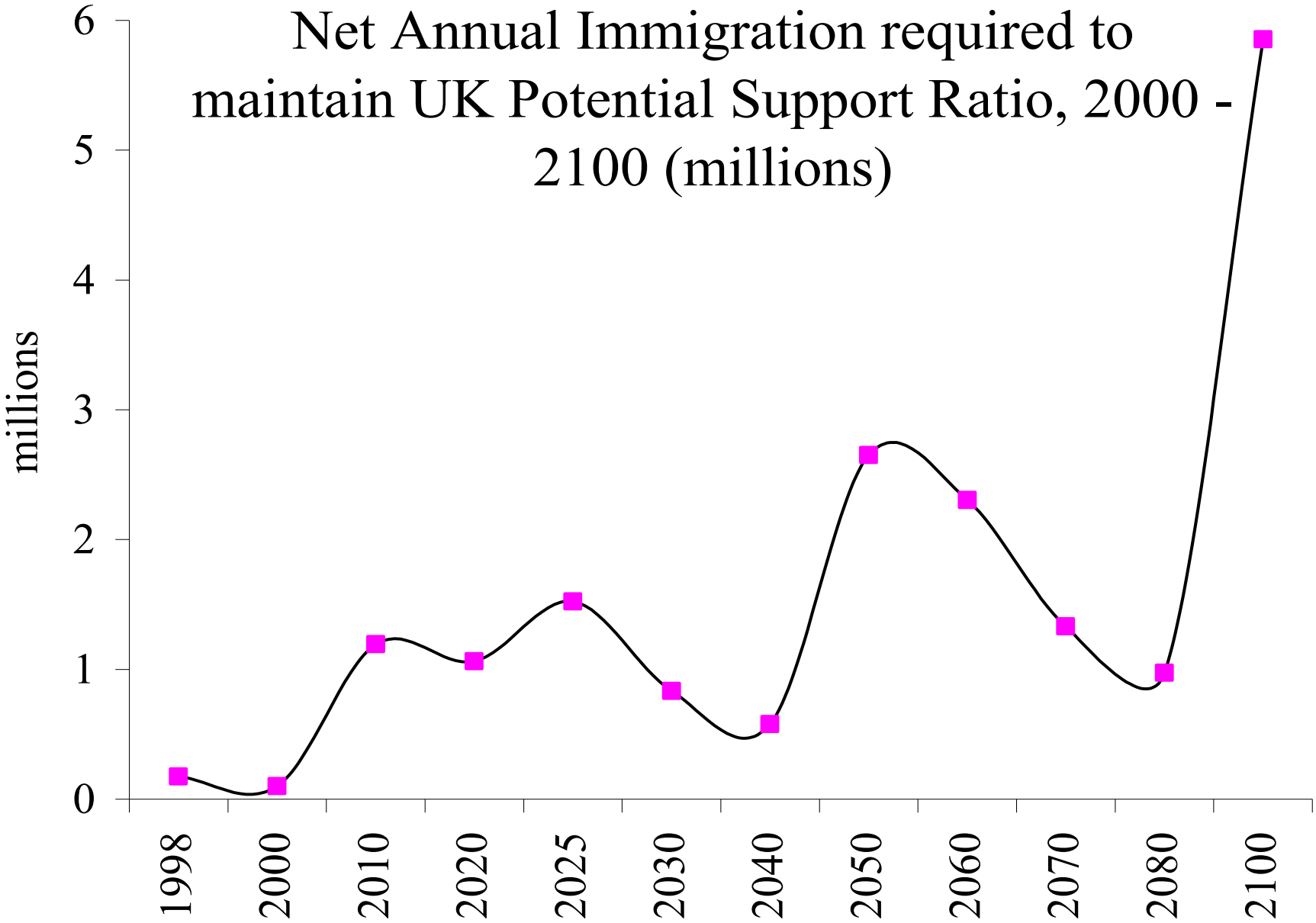

Indian population, England and Wales
Census 2001 (percent)
90 +
80-84
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
5.00
3.00
1.00
1.00
3.00
5.00
percent of population
females
males

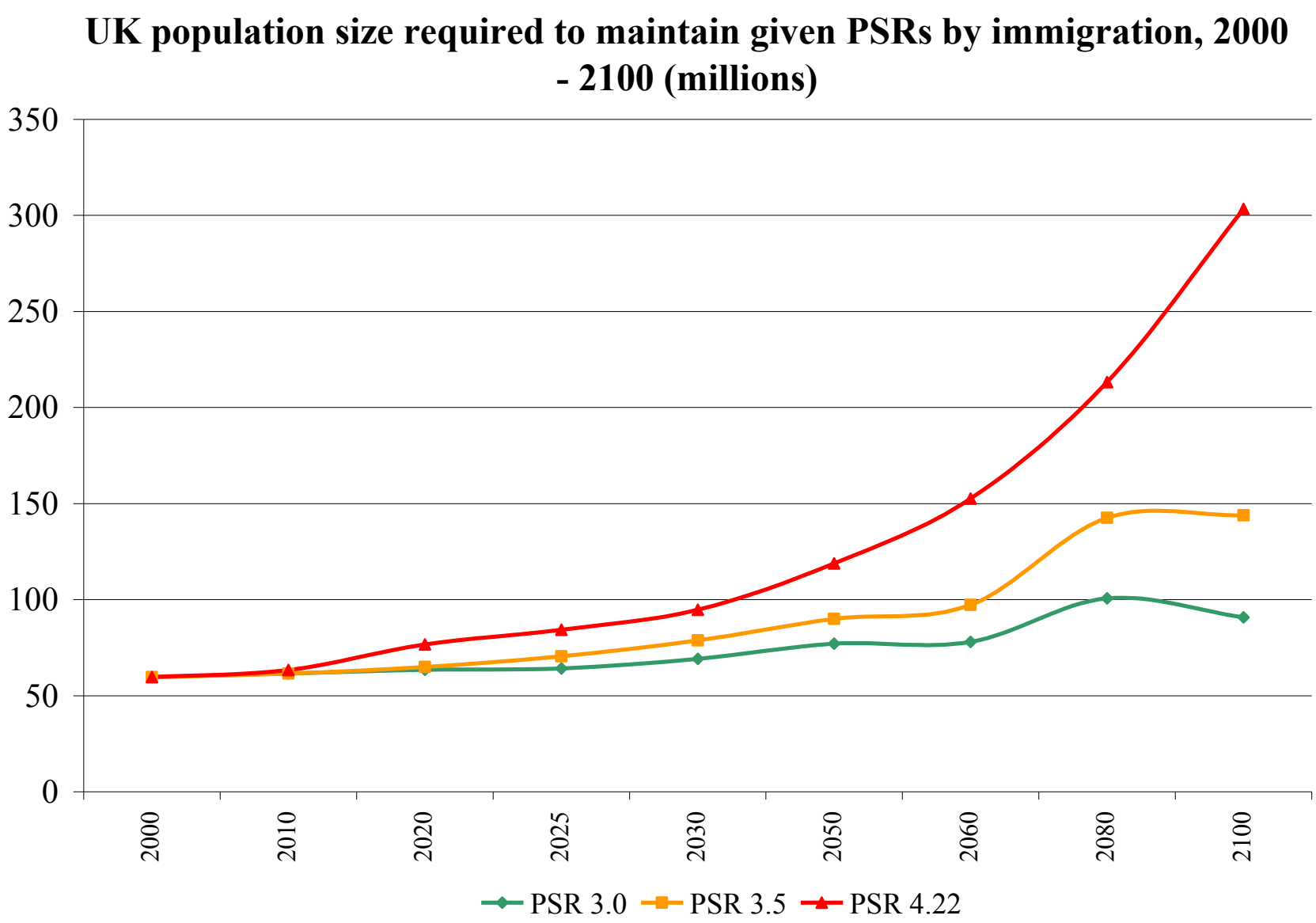
No limits to migration? Immigration and the PSR

Population Trends 103

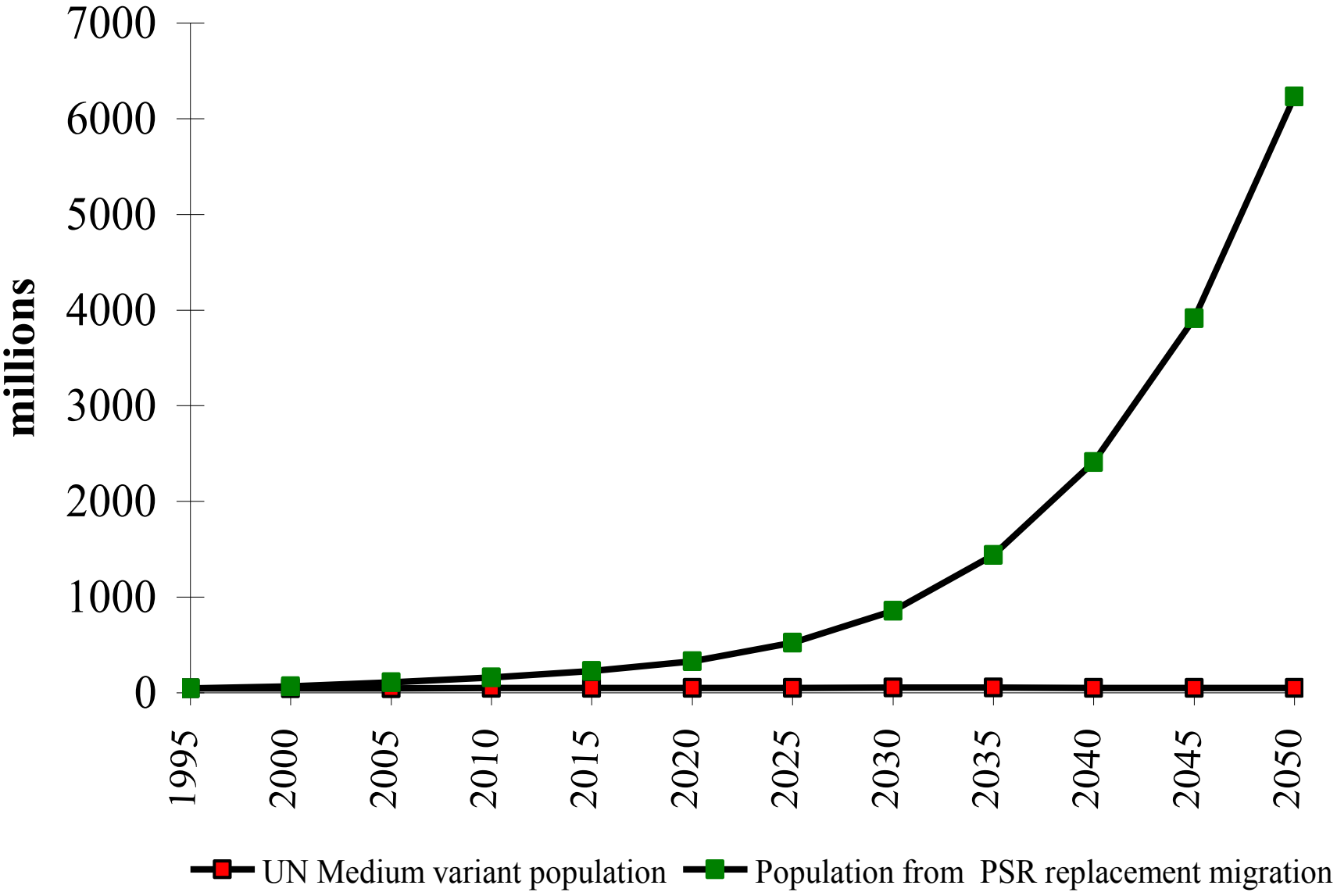
Figure 8 Support ratio under alternative assumptions, United Kingdom, 1980-2100
(a) alternative migration assumptions




Net Annual Immigration required to maintain UK Potential Support Ratio, 2000 - 2100 (millions)
millions
6
5
4
3
2
1
0
1998
2000
2010
2020
2025
2030
2040
2050
2060
2070
2080
2100


UK population size required to maintain given PSRs by immigration, 2000 - 2100 (millions)
350
300
250
200
150
100
50
0
2000
2010
2020
2025
2030
2050
2060
2080
2100
PSR 3.0
PSR 3.5
PSR 4.22

All the world must go to live in Korea



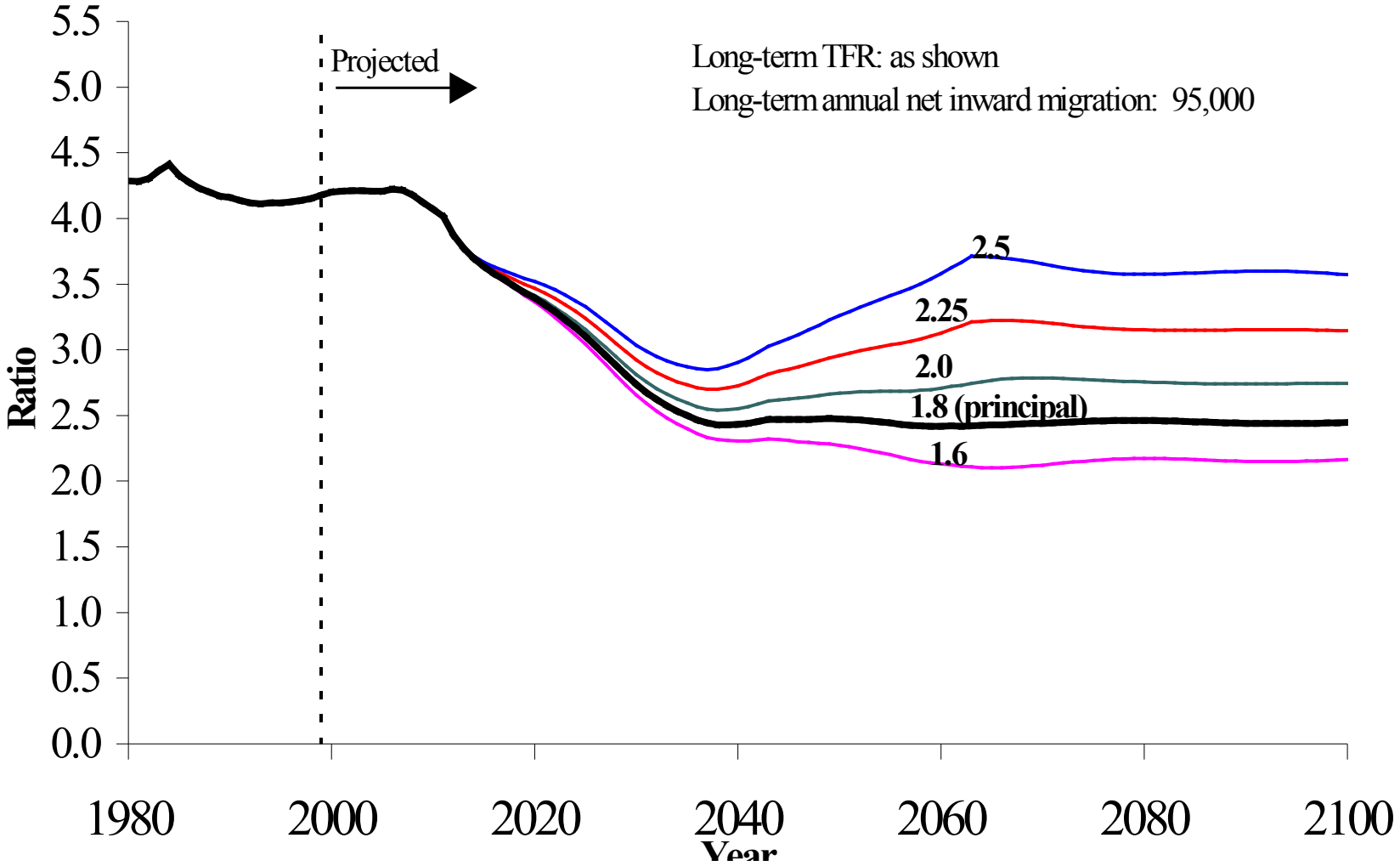
Can higher fertility save the day? Only up to a point.

Replacement TFR (2.08) would eventually maintain population size and raise PSR to near 3. If no net migration, no popn. growth

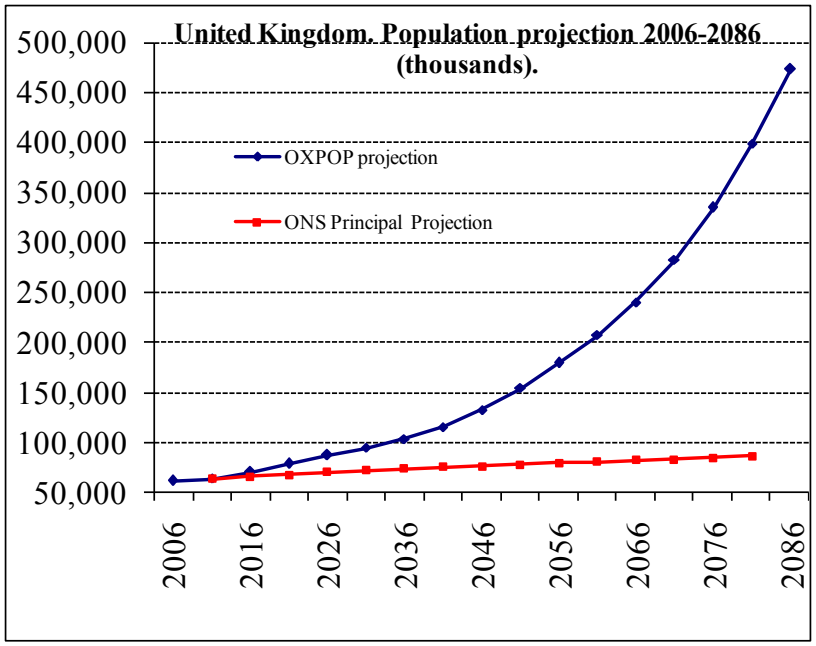
TFR would need to rise to about 3.5 to ‘preserve’ current PSR of about 4.

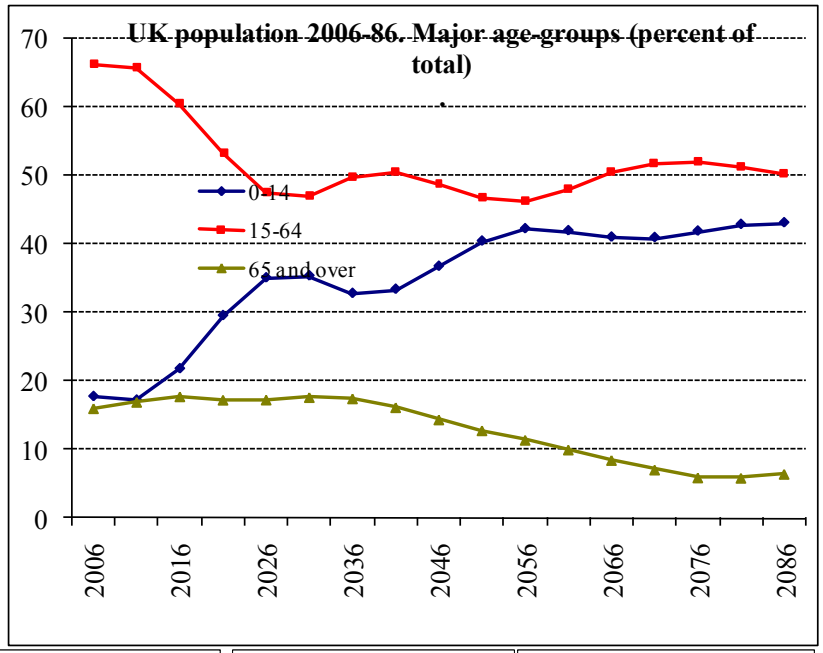
That would raise population growth rate to about 1.8% per year: considerable population growth though not as great as ‘equivalent’ effect with immigration.

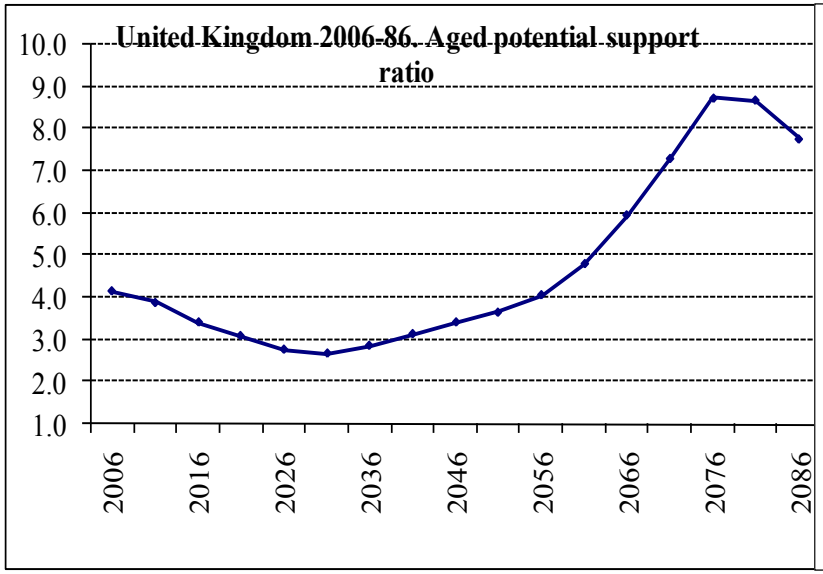
Effects on UK PSR of different fertility levels (Population Trends 103)

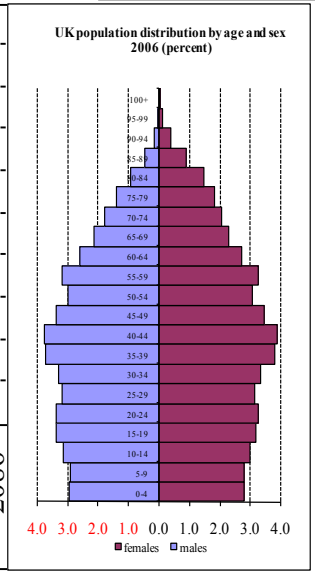


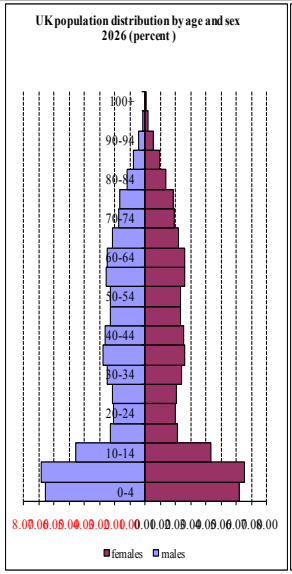
How to restore UK PSR to about 4 by 2056 (i) TFR of 5.5

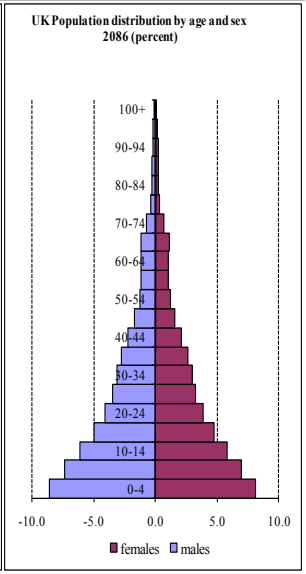




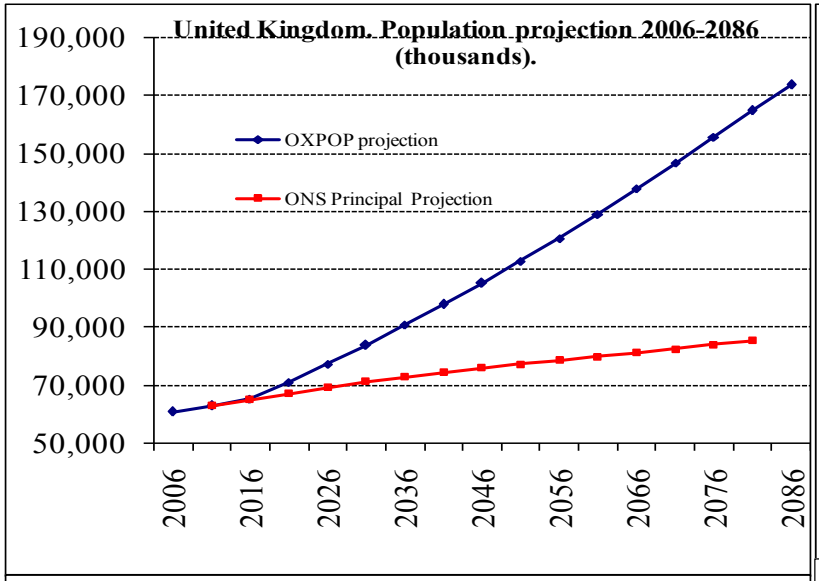


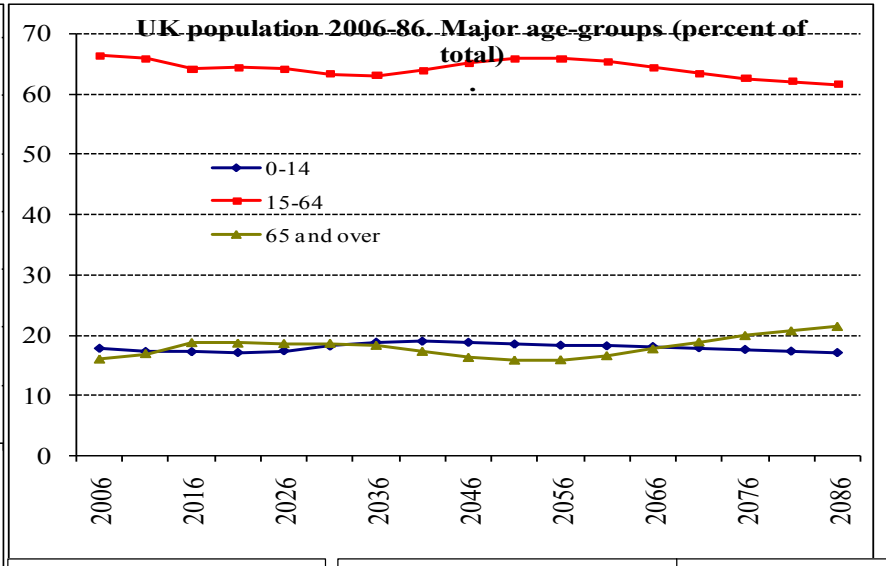


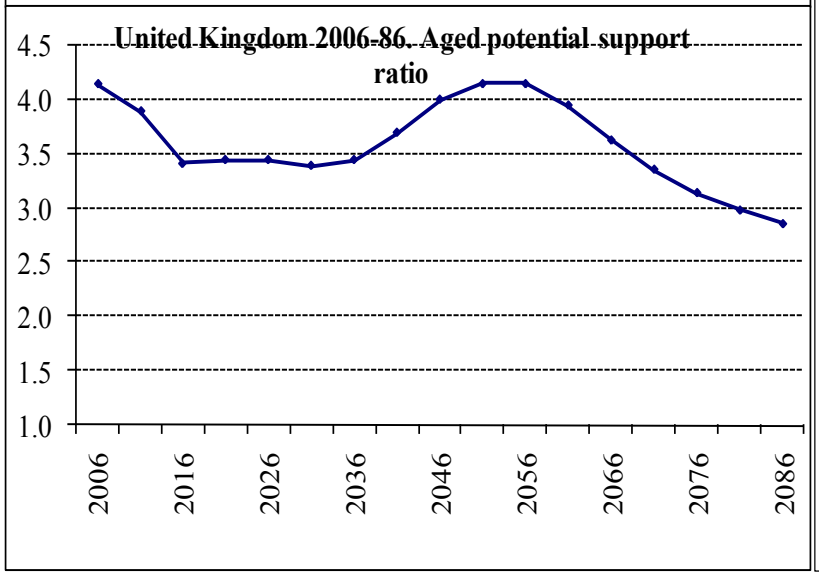


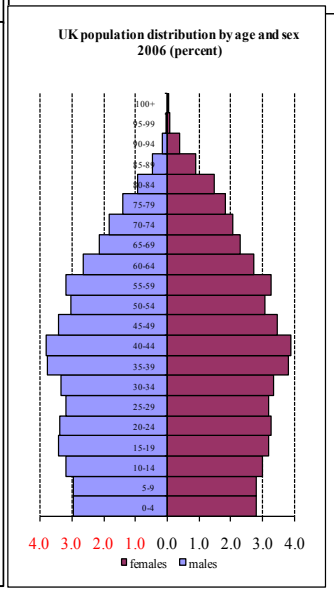


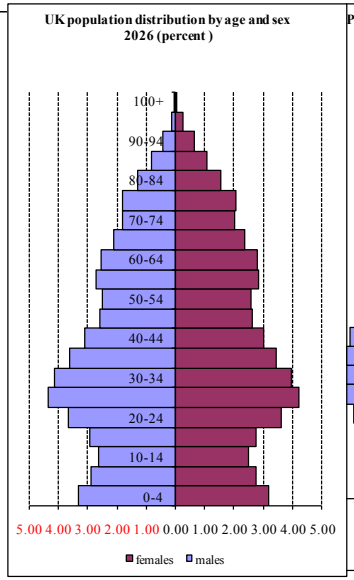
How to restore UK PSR to 4 by 2056. (ii) increase net annual immigration to 800,000.

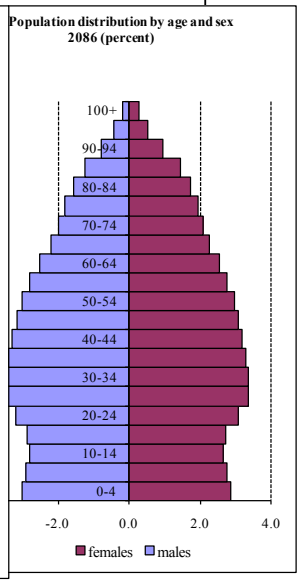












Demography isn't everything

Ageing Vulnerability Index 2003

	Overall Index		Public Burden	Fiscal Room	Benefit Dependence	Elder Affluence
	Rank	*Score*	*Rank*	*Rank*	*Rank*	*Rank*
Australia	**1**	**-1**	2	2	4	6
UK	**2**	**7**	1	1	6	11
US	**3**	**18**	3	4	3	1
Canada	**4**	**42**	6	6	5	2
Sweden	**5**	**48**	4	3	8	10
Japan	**6**	**50**	9	9	1	3
Germany	**7**	**52**	7	5	11	5
Netherland	**8**	**62**	8	7	9	4
Belgium	**9**	**63**	5	8	10	9
France	**10**	**81**	10	10	12	8
Italy	**11**	**84**	11	11	2	12
Spain	**12**	**93**	12	12	7	7
		weight	1/3	1/3	1/6	1/6

Source: Jackson and Howe 2003, Figure 18

Managing population ageing

Improve the actual support rate

(a) increase workforce participation

- retraining unemployed, discouraging early retirement and perpetual students,
- more flexible labour market arrangements
- help women to combine work with childcare (part-time work, school hours)

(b) increase the average age of retirement

- increase pension entitlement age
- remove tax and other disincentives for working pensioners
- end of ‘cliff-edge’ retirement.

Moderate financial burden

- limit state pension, 'second and third pillar' funded pensions .

Increase labour productivity

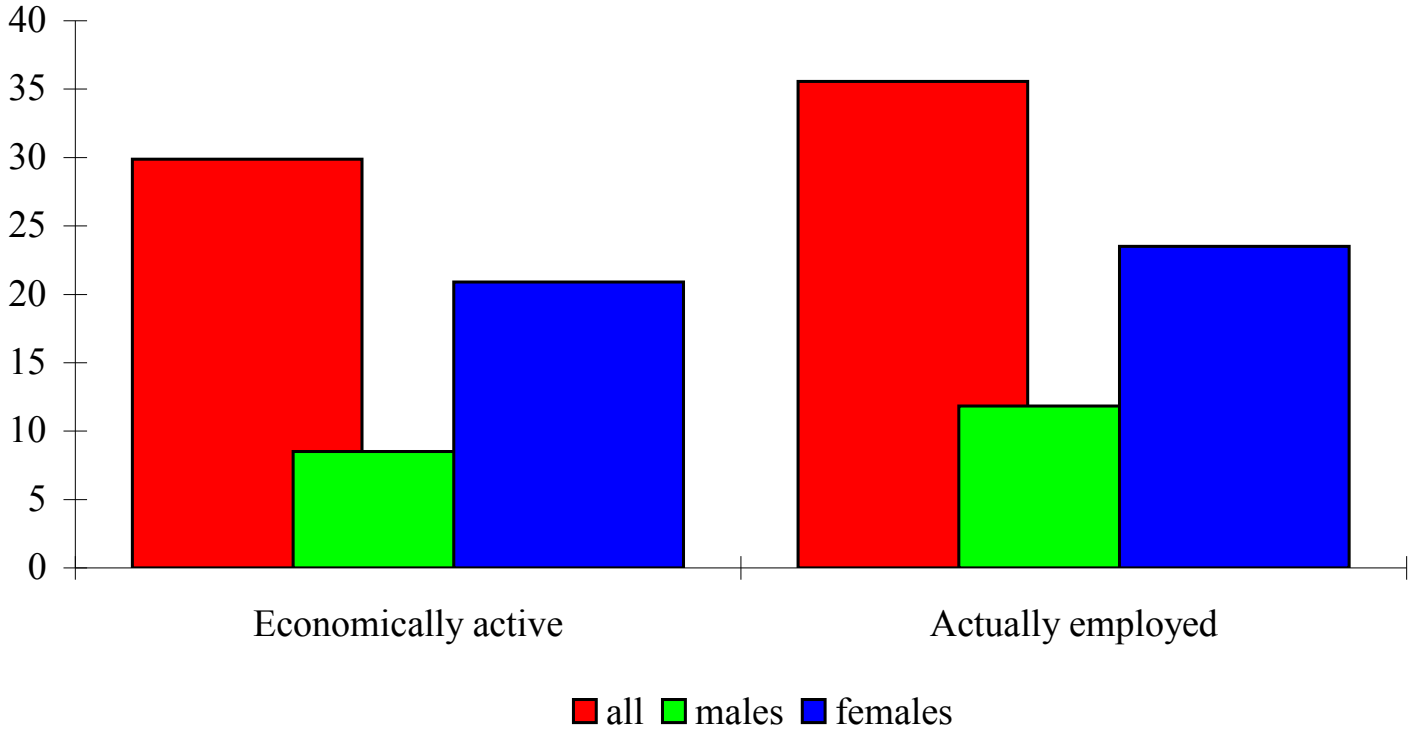
Real support ratios- lower or much lower than 'potential' ones

Real aged support ratio: number employed / number of pensioners

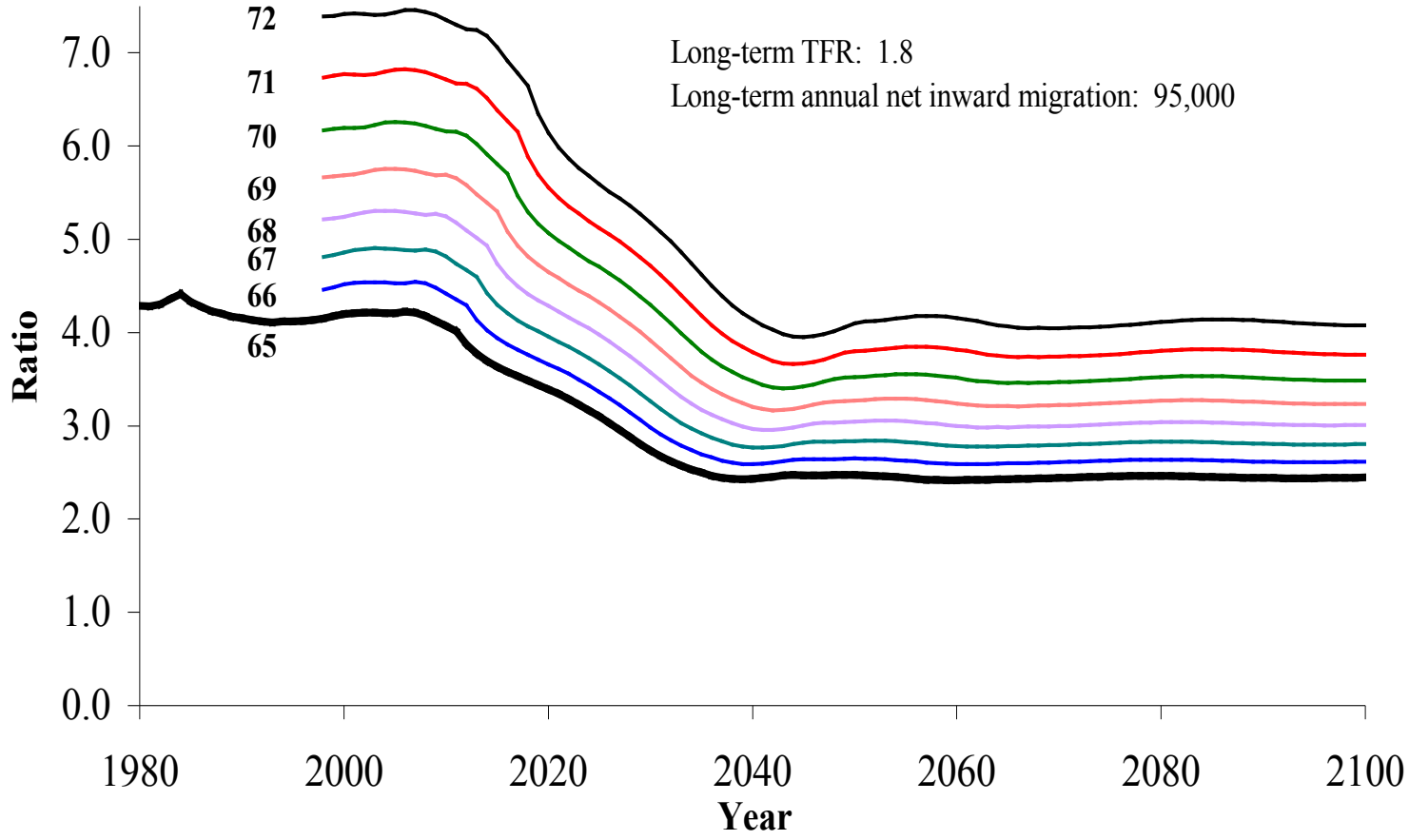
Real overall support ratio: Number employed / number of pensioners + working age not employed + children

Effect on EU15 labour force of Danish participation rates

Potential increase in EU 15 workforce , 1999,
given Danish participation rates (millions)

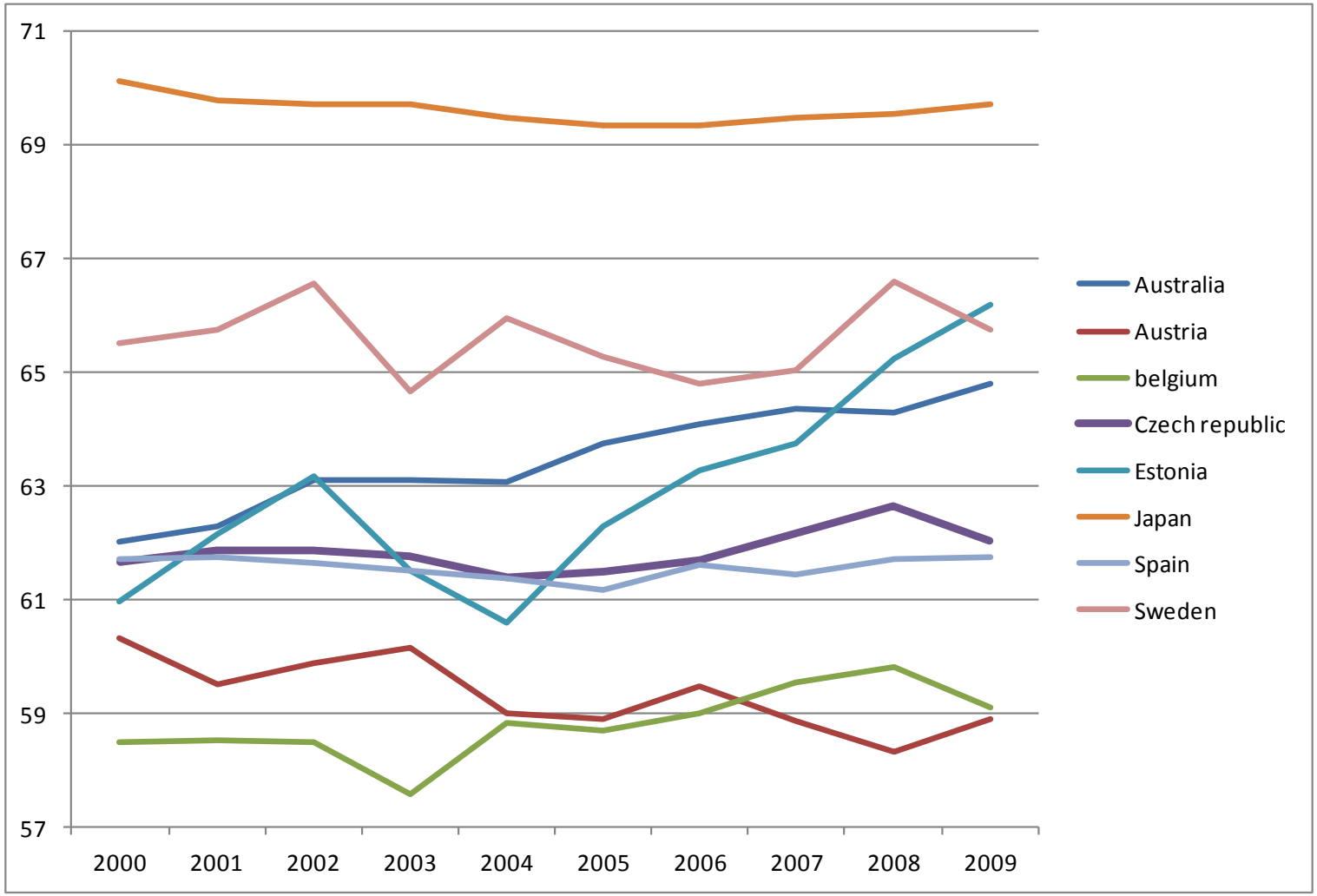


Effects on UK PSR of higher retirement ages *Population Trends 103*



Effective retirement ages, men, 2000 – 2009.

Source: OECD



Pension variety and reform

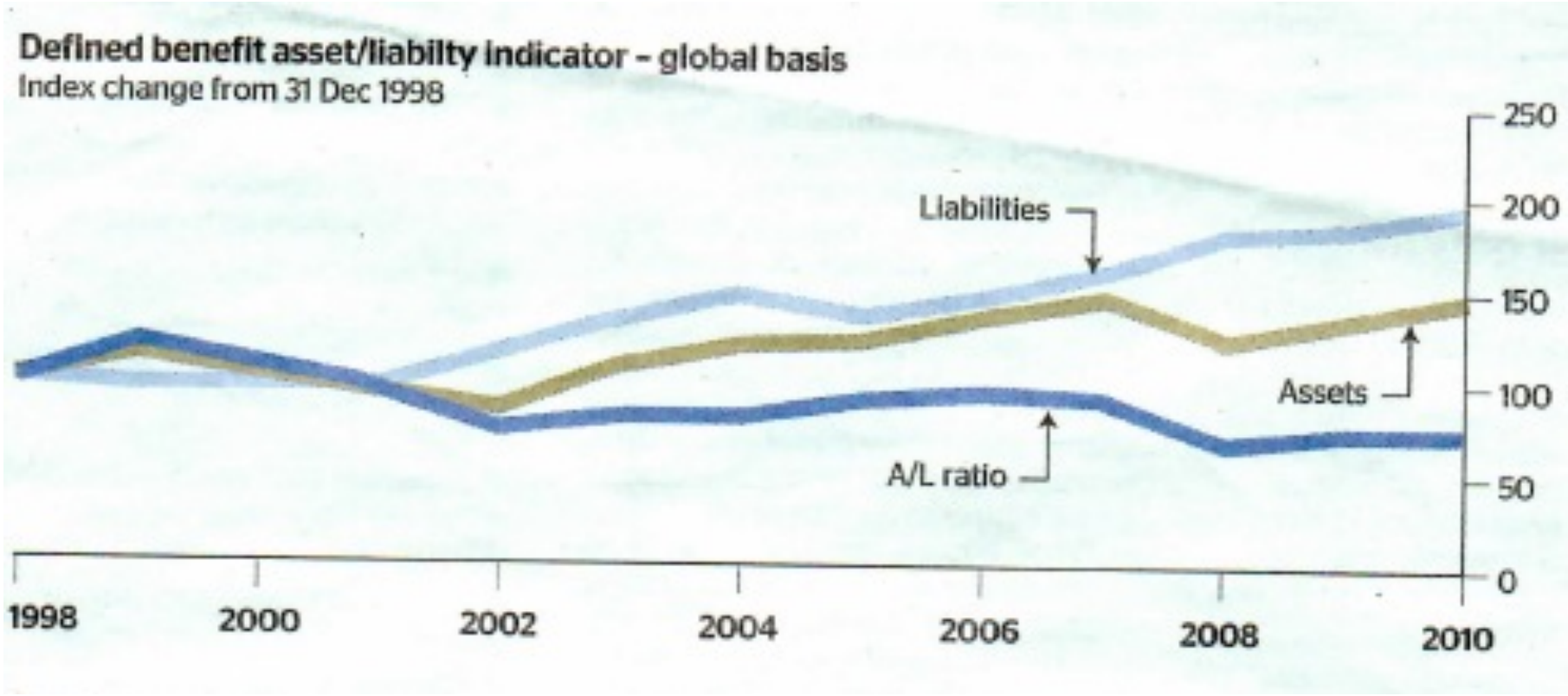
PAYG unfunded, directly vulnerable to population ageing, cheap to administer, state system, huge vested (voter) interest.

Occupational funded, employer and employee contribute, can promote investment, vulnerable indirectly to population ageing. 'Final salary' schemes now unaffordable, being dropped.

Private funded, employee only contributes, and takes risk.

But reform is difficult…..

Global defined-benefit pensions: ratio of liabilities to assets. Times 8 Feb 2011 Business p. 12. UK assets $2.3 trillion



Protests against austerity turn nasty – Greek general strike , Athens 2011. Times 24 February 2011

A motorcycle officer hit by a petrol bomb in Athens during a general strike yesterday is helped by a colleague. More than 50,000 people marched to the central Syntagma Square before violence began

Conclusions

No demographic ‘solutions’ for inevitable population ageing. Some pain unavoidable.

‘Replacement’ migration for total and working-age population difficult, for age-structure a fantasy.

Return to fertility closer to 'replacement' very helpful, but still no ‘solution’. Non-demographic management crucial.

‘Doomsday’ or ‘timebomb’ scenarios assume no adaptation by public policy or the market.

Management much more difficult if birth rates persistently low, as in Italy, Japan.

Countries in Southern Europe disadvantaged by low fertility, low mortality, low participation rates, early retirement, , strict employment protection, high PAYG pensions.

Management needs parallel reforms of workforce participation, retirement age, pensions funding, capital investment, productivity improvement.