

## Simulations on Employment and Fiscal implications of Ageing

*Meeting on National Focal Points of Ageing  
in the UNECE region  
Segovia, 13-15 November 2006*

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*This presentation is based on OECD work on Ageing, in particular:*

***The impact of Ageing on Demand, Factor Markets and Growth*** by Oliveira Martins, Gonand, Antolin, de la Maisonneuve and Yoo (2005).

*OECD Economics Department Working Papers no. 420*

***Projecting OECD Health and Long-Term care Expenditures: What are the main drivers?*** by Oliveira Martins, de la Maisonneuve and Bjornerud (2006)

*OECD Economics Department Working Papers no. 477*

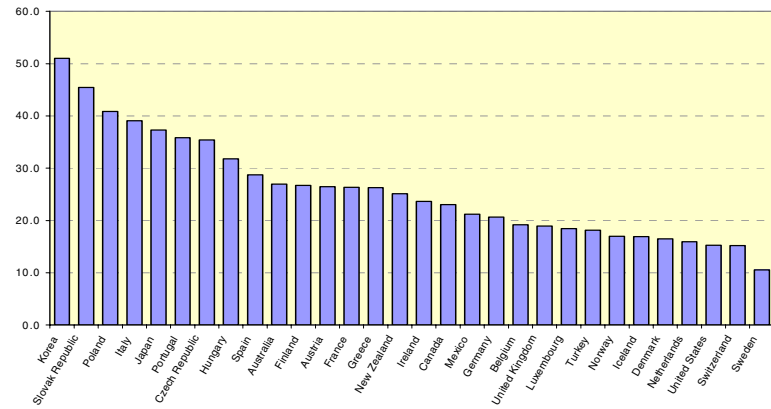
## Outline of the presentation

- Demographic issues
- The impact of ageing on employment
- The impact on public finances
  - *Pensions*
  - *Health care*
- Policies to cope with impact of ageing
  - *Ageing will slow down growth*
  - *How to implement reforms?*

## *Demographic issues*

## By 2050, old-age dependency ratios will double in many countries...

Increase in the old-age dependency ratio between 2005 and 2050<sup>1</sup>  
(In percentage points of working age population)



1. Ratio of population aged 65 and over to population aged 15-64.  
Source: Secretariat calculations.

## ...and national population projections may underestimate this trend...

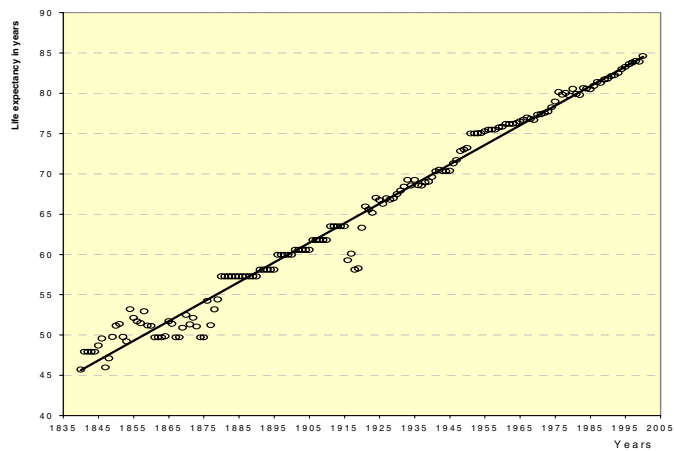
Table 2.3. Comparison of past with projected gains in life expectancy  
in number of years per decade

	(A) average gains 1960-2000	(B) projected gains 2000-2050	Difference (B)-(A)
Australia	2.1	1.2	-0.9
Austria	2.4	1.4	-1.1
Belgium	1.8	1.6	-0.2
Canada	2.0	0.6	-1.4
Czech Republic	1.1	..	..
Denmark	1.1	1.1	-0.1
Finland	2.2	0.9	-1.3
France	2.2	1.8	-0.4
Germany	2.0	1.2	-0.8
Greece	2.1	0.8	-1.3
Hungary	0.9	..	..
Iceland	1.7	0.5	-1.2
Ireland	1.7	0.9	-0.8
Italy	2.4	1.1	-1.3
Japan	3.4	0.8	-2.6
Korea	5.8	1.7	-4.1
Luxembourg	2.2	1.1	-1.1
Mexico	4.1	1.2	-2.9
Netherlands	1.1	0.5	-0.6
New Zealand	1.7	1.2	-0.5
Norway	1.3	1.5	0.2
Poland	1.5	1.2	-0.3
Portugal	3.1	1.1	-2.0
Slovak Republic	0.7	1.5	0.8
Spain	2.3	0.5	-1.8
Sweden	1.7	0.9	-0.7
Switzerland	2.0	1.1	-0.9
Turkey	5.0	1.6	-3.4
United Kingdom	1.8	0.9	-0.8
United States	1.7	1.4	-0.3
average	2.2	1.1	-1.0

Source: OECD/DELSA Population database and Eco Santé

## ...because longevity is increasing steadily

Figure 2.2 Historical trends in female life expectancy, 1840-2000 <sup>1</sup>

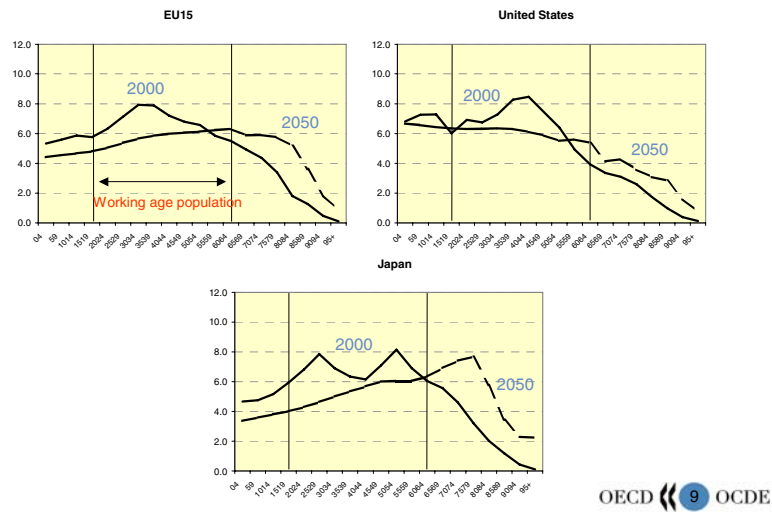


1. Country with the highest life expectancy. The linear trend: slope=2.43 and R<sup>2</sup>=0.98. OECD  7 OCDE  
Source: Oeppen and Vaupel (2002).

## Ageing and Employment

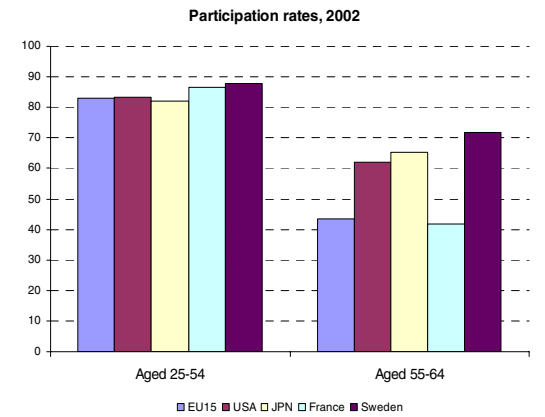
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## A strong change in population structure (in % total population)



## The situation in the labour market compounds the demographic problem

- Early retirement is a problem.
- Participation rates of old-age workers are low, in particular in Europe.

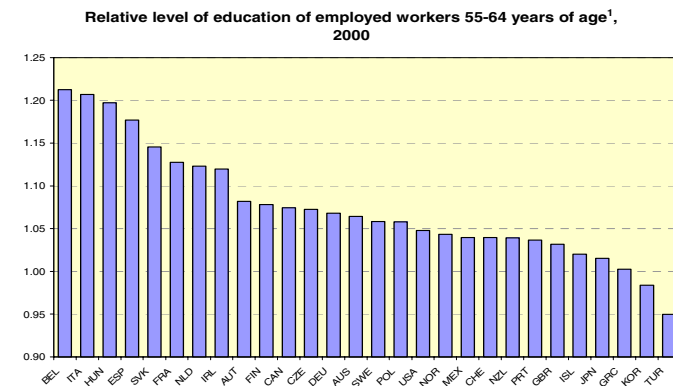


## Participation rates of older workers are low because...

(1) There are strong financial incentives to retire early arising from the design of pension systems and/or other benefit programs.

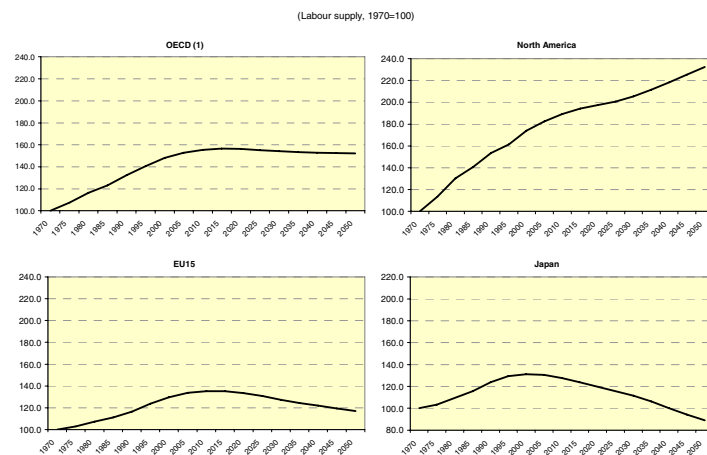
→ The implicit tax of working an extra year in old-age pension systems when reaching age 60 can be 30% on average for OECD countries (Duval, 2003)

(2) Old-age workers have lower educational attainment and low incentives to update qualifications and take training.



1. Ratio between the average education level of employed workers 55-64 years old and the average level of education of the population in the same age group.  
Source: OECD Education database.

## With unchanged policies, ageing will induce an absolute decline in the labour force...

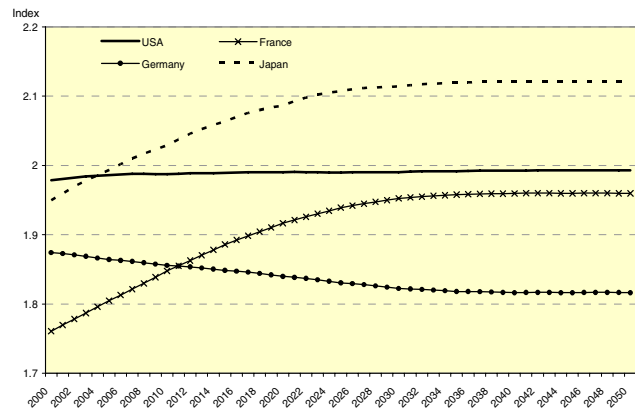


1. Excluding Czech Republic, Hungary, Mexico, Poland, Slovak Republic.  
Source: OECD Labour Force Statistics and OECD/DELSA Population Database.

## ...but could be compensated by other factors

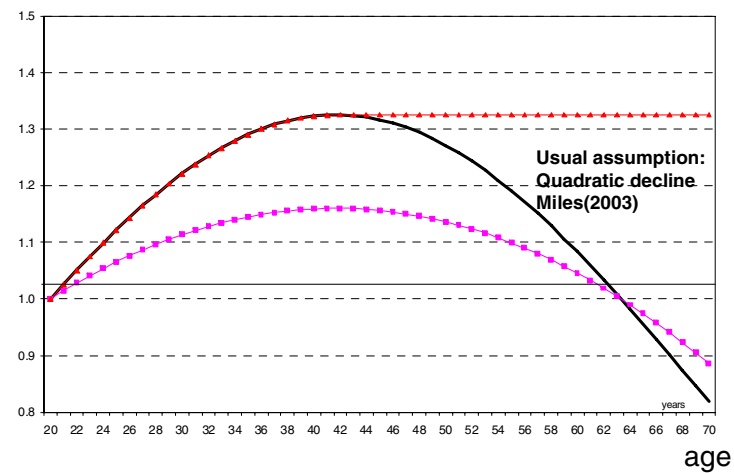
- Labour quality may increase if:
  1. *Younger cohorts are more educated than the retiring cohorts*
  2. *Individual age-productivity profiles stabilise at older ages.*
- Increased labour participation [& migration]
- Pension savings favour capital deepening which increases labour productivity

### Higher education may help Ageing induces a mechanic increase of the average education level of the labour force

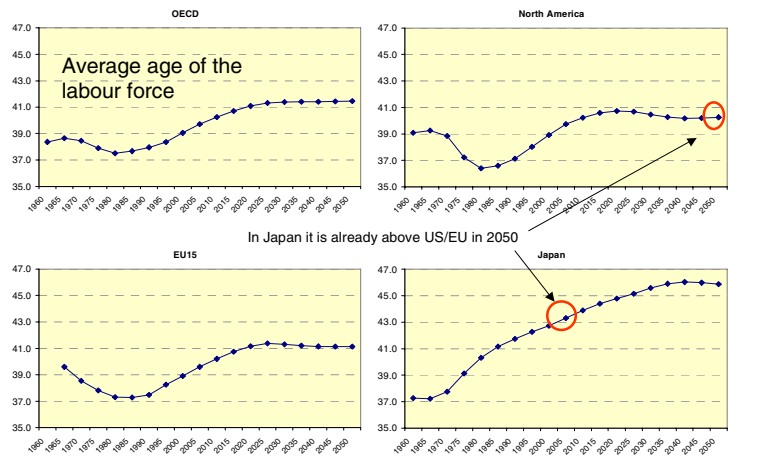


1. The total level of education of the labour force is the weighted average of primary education (weight 1), lower secondary (1.4), upper secondary (1.7) and tertiary (2.6).  
Source: OECD Education database, OECD/DELSA Population Database and OECD calculations.

### Does productivity really decreases with age?...



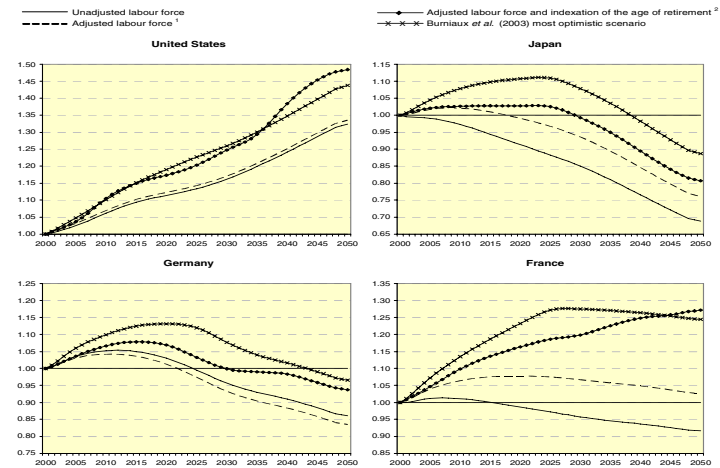
... but it does not matter much because we are actually recovering from a 1970s 'rejuvenating' shock



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## Summing-up: Higher labour quality and increased participation can offset the decline in labour supply

Labour supply including quality adjustments and policy scenarios  
(2000=1)



1. Adjusted for productivity (increasing until 42 and then flat) and education levels.  
 2. Indexed in line with life expectancy gains underlying national projections (see table 2.3).  
 Source: OECD calculations.

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## *The Fiscal Impact of Ageing*

## The ratio of pension expenditure to GDP can be decomposed...

$$\begin{aligned} \frac{\text{Pension expenditure}}{\text{GDP}} &= \frac{\text{beneficiaries} * \text{average\_pension}}{\text{average\_productivity} * \text{employment}} = \\ &= \left( \frac{\text{Average\_pension}}{\text{Average\_productivity}} \right) * \left( \frac{\text{Beneficiaries}}{\text{Employment}} \right) = \\ &= \left( \frac{\text{Average\_pension}}{\text{Average\_productivity}} \right) * \left( \frac{\text{Beneficiaries}}{\text{PoP\_60+}} \right) * \left( \frac{\text{PoP\_60+}}{\text{PoP\_16-60}} \right) * \left( \frac{\text{PoP\_16-60}}{\text{Employment}} \right) \end{aligned}$$

### ...highlighting the main drivers of pension spending

$$= \left( \frac{\text{Average\_pension}}{\text{Average\_productivity}} \right) \cdot \left( \frac{\text{Beneficiaries}}{\text{PoP}_{60+}} \right) \cdot \left( \frac{\text{PoP}_{60+}}{\text{PoP}_{16-60}} \right) \cdot \left( \frac{\text{PoP}_{16-60}}{\text{Employment}} \right)$$

+/-                      +/-                      +                      +

- Parameters of the pension system:
  - The benefit ratio
  - The eligibility ratio
- The old-age dependency ratio
- The employment ratio

### The fiscal impact of the pension bill is quite large

**Table Old-age pension spending and its decomposition, 2000-2050.**  
(Levels in percent of GDP, changes in percentage points)

	Old-age pension spending		Contributions of:			
	level 2000	change 2000-2050	Dependency ratio	Employment ratio	Benefit ratio	Eligibility ratio
Australia	3.0	1.6	2.5	-0.1	-0.5	-0.2
Finland	8.1	4.8	5.2	-0.1	-0.2	0.0
France <sup>a</sup>	12.1	3.8	7.6	-0.5	-3.4	0.4
Germany	11.8	5.0	6.4	-0.7	-2.7	2.1
Italy	14.2	-0.3	10.1	-3.2	-5.5	-1.5
Japan	7.8	0.6	5.1	-1.2	-3.9	0.9
Korea	2.1	8.0	4.8	-1.0	0.2	5.0
Netherlands <sup>b</sup>	5.2	4.8	3.8	-0.5	0.2	1.4
Norway	4.9	8.0	3.0	0.1	3.9	1.2
Spain	9.4	8.0	8.6	-2.6	0.0	2.0
Sweden	9.2	1.6	3.9	-0.5	-2.1	0.4
United Kingdom	4.3	-0.7	1.7	0.1	-2.5	0.1
United States	4.4	1.8	2.4	-0.1	-0.2	-0.3
<b>Average of all countries<sup>c</sup></b>	<b>7.4</b>	<b>-3.3</b>	<b>5.2</b>	<b>-0.8</b>	<b>-1.3</b>	<b>0.5</b>

a) For France, the latest available year is 2040.

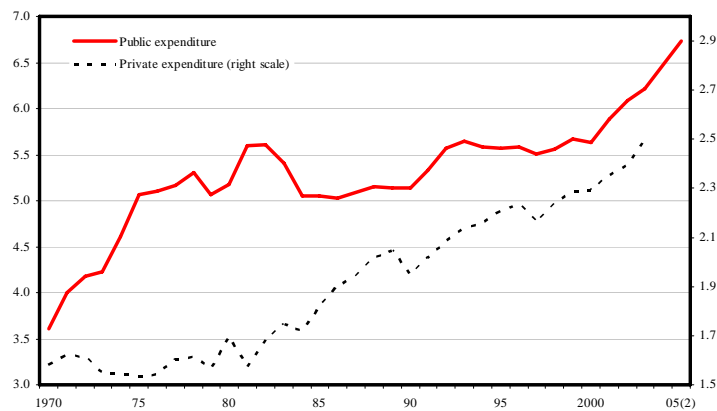
b) "Early retirement" programmes only include spending on persons 55+.

c) Average includes all the countries who reported projections in Dang, Antolin and Oxley (2001)

Source : Tables 4 and 5 in Dang, Antolin and Oxley (2001).

## Public health spending is also growing fast...

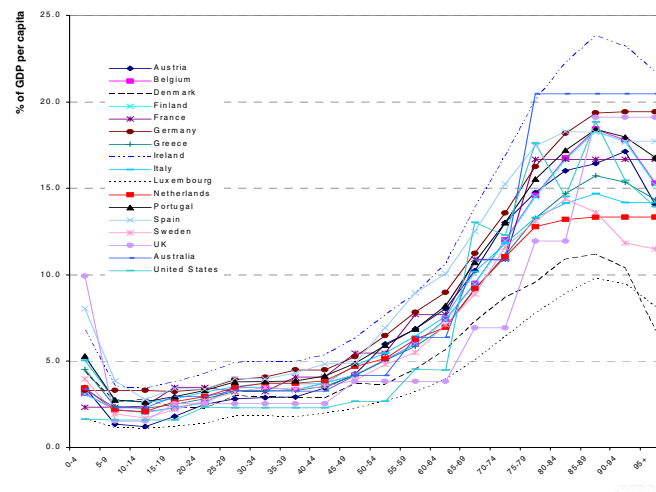
Evolution of public and private OECD total health spending<sup>1</sup>  
As a % of GDP



1. Unweighted average of available OECD countries.  
2. OECD estimates.  
Source: OECD Health Database (2005).

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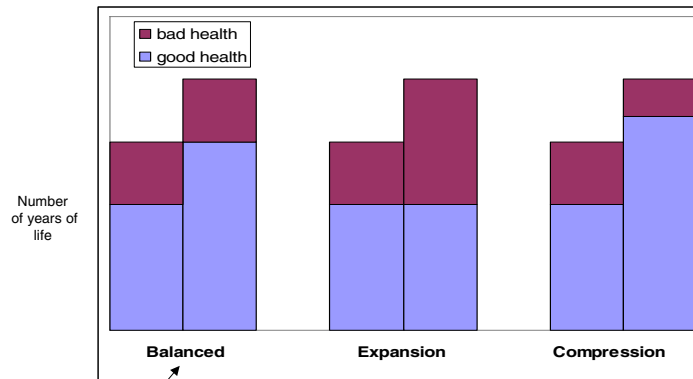
## Health care expenditure increases with age... (normalised GDP p.c. 1999)



Source: ENPRI-AGIR and OECD

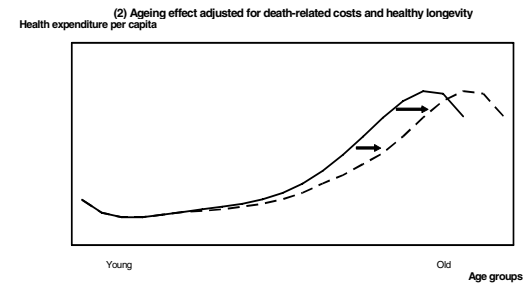
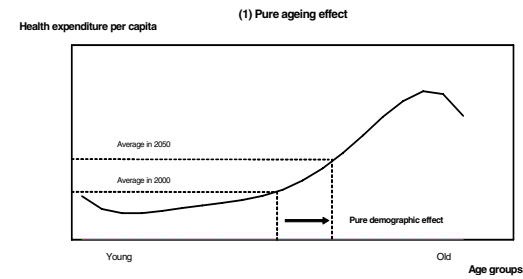
Age groups  
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... but the effect of ageing depends on how the health status evolves with longevity

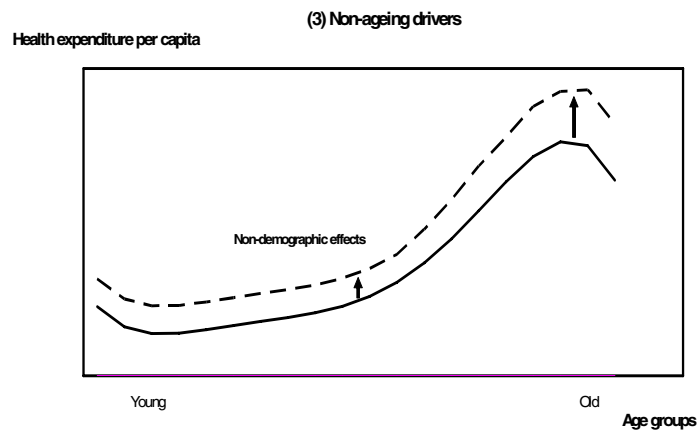


Healthy ageing scenario (benchmark)

## Demographic drivers illustrated

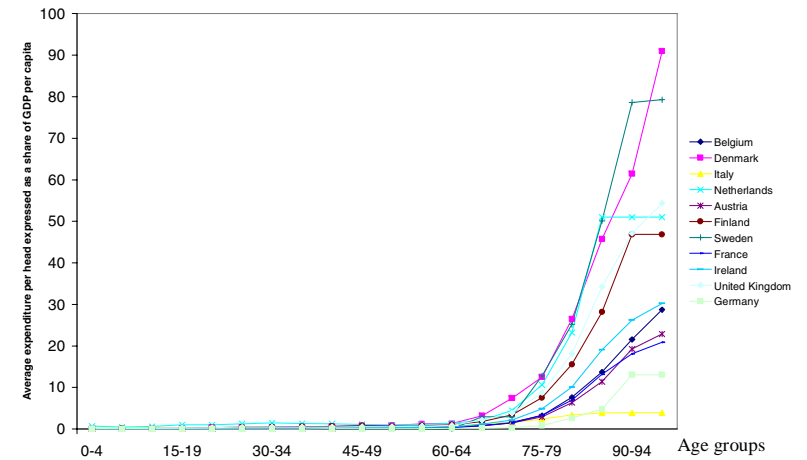


## Non-demographic drivers illustrated



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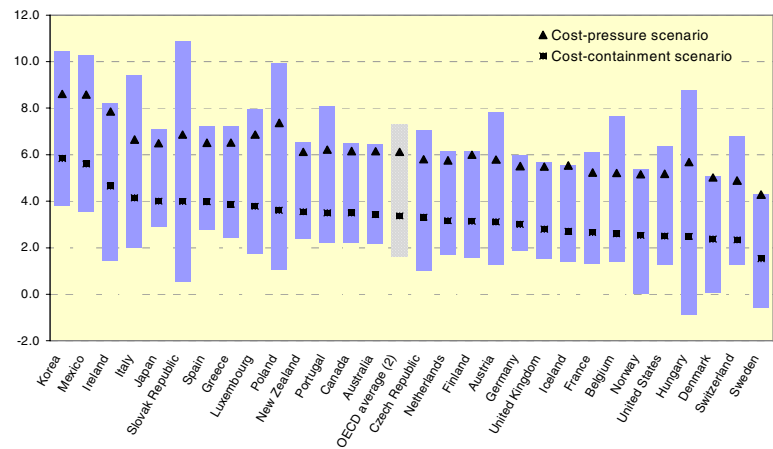
## Long-term care expenditure profiles are very different from health care



Source: European Network of Economic Policy Research Institutes, The AGIR project OECD 28 OCDE

## What are the expenditure projections?

Total increase in health and long-term care spending, 2005-2050  
In percentage points of GDP



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## Summary of health projections, 2005-2050

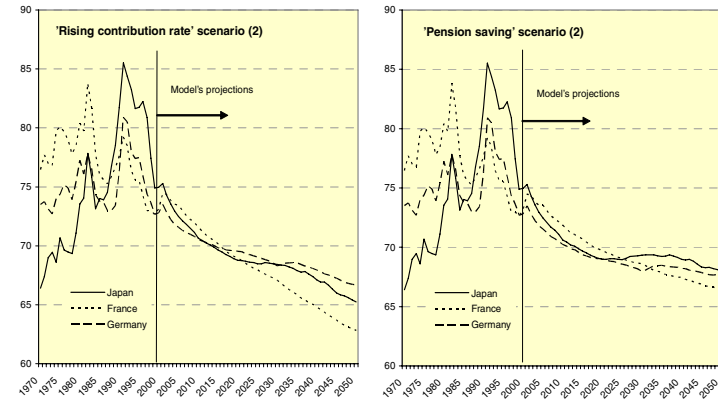
- Optimistic (cost-containment) scenario: total health expenditures are projected to increase by **3.4 percentage points of GDP**
- Pessimistic (cost-pressure) scenario: the increase would be **6.2 percentage points**
- For health care, demographic effects will increase over time, but are not key. Non-demographic factors (e.g. income, technology) will be the main drivers
- In contrast, demographic effects are the main expenditure driver for long-term care

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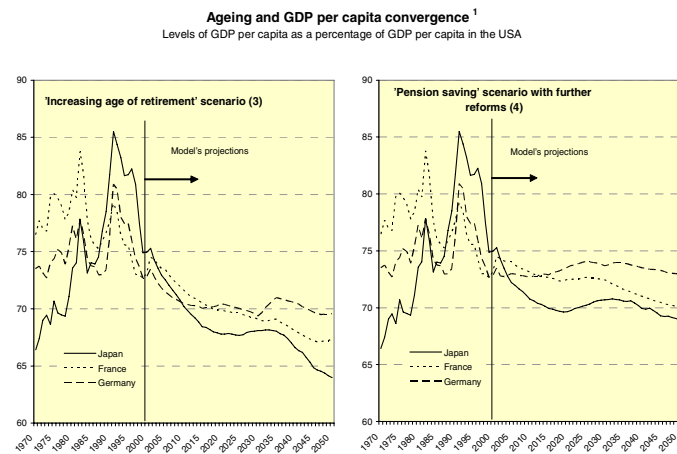
## *Coping with the impact of ageing*

## Ageing contributes to the divergence of GDP *per capita*...

**Ageing and GDP per capita convergence <sup>1</sup>**  
Levels of GDP per capita as a percentage of GDP per capita in the USA



## ... but could be mitigated by comprehensive reforms



1. Before 2002, GDP per capita is expressed using PPPs. The dynamics after 2002 reflect only demographic factors.
  2. Participation rates frozen at their 2000 levels.
  3. Increasing participation rates at older ages because of rising age of retirement.
  4. Including effects of recent policies and the most optimistic policy scenarios on future participation rates following Burniaux *et al.* (2003).
- Source: OECD calculations.

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## Main policy actions

- Increase employment rates, in particular of old-age workers
- Link retirement age to longevity gains
- Reforms improving the link between pension benefits and contributions
- Introduce funding

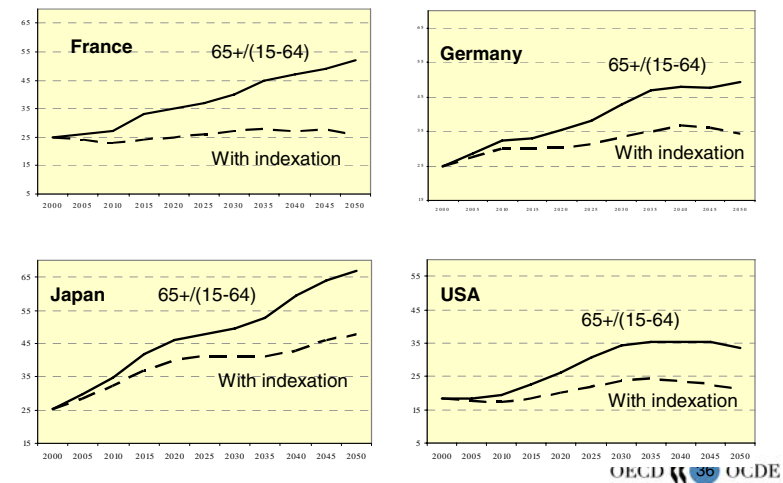
But, how to implement them?

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## Increase employment rates, in particular of old-age workers

- Remove institutional distortions curbing participation of old-age worker.
  - Reforms that achieve actuarial neutrality offer the largest positive impact on participation (Burniaux et al., 2003)
- Labour demand issues: introduce incentives for employers and employees to take up training. Keep wage-productivity gap from increasing.
  - Remove compulsory retirement

## Link retirement age to longevity gains Effect of indexing old-age threshold on longevity



### Improve the link between pension benefits and contributions

- Notional defined contribution schemes (Sweden, Italy)
- Defined contribution systems and private accounts, but who bears the risk?
- Increasing individual capital accumulation requires developing certain segments helping to cope with the individual longevity risk (annuities, reverse mortgages)

### Introduce funding

- PAYG systems more expose to demographic shocks than funded systems.
- Tax incentives to promote private retirement saving accounts are not very effective (cf. Antolin, de Serres, and de la Maisonneuve, 2004)
- Problem: surpluses in the social security budget are part of the consolidated budget, so a better definition of implicit public liabilities may be needed

**Bottom-line:**

**→ Ageing could be good or bad depending on longevity gains are managed**

**→ Complementary reforms are more likely to offset the impact of ageing than piecemeal reforms**

***Thank you !***