

Earnings related schemes: Design, options and experience



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World Bank core course
Washington DC, March 2014

Objectives



□ Primary objective:

- ensuring older people have a decent standard of living

□ Secondary objectives

□ capital markets:

- institutional development
- encourage national savings

□ labour markets

- retirement decisions
- restructuring

□ public finances

- providing funds for socially/economically targeted investments

Objectives



□ Primary objective

- ensuring older people have a decent standard of living in retirement

□ Two interpretations

- 'Adequacy': ensuring older people meet a basic standard of living
- 'Insurance/forced savings': ensuring a reasonable standard of living in retirement relative to position before retirement

Objectives and measures



- Adequacy: an **absolute** measure of living standards
 - individual pension entitlement as a proportion of economy-wide average earnings
 - **pension level**
- Insurance: a **relative** measure of living standards
 - individual pension entitlement relative to individual earnings when working
 - **replacement rate**

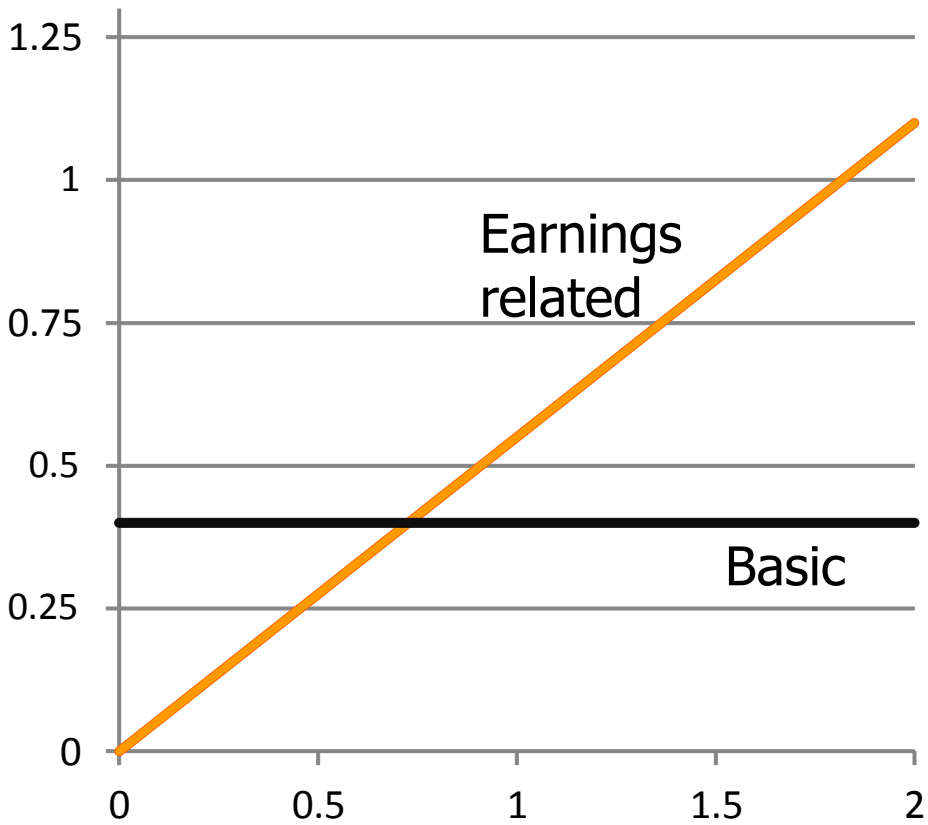
International experience



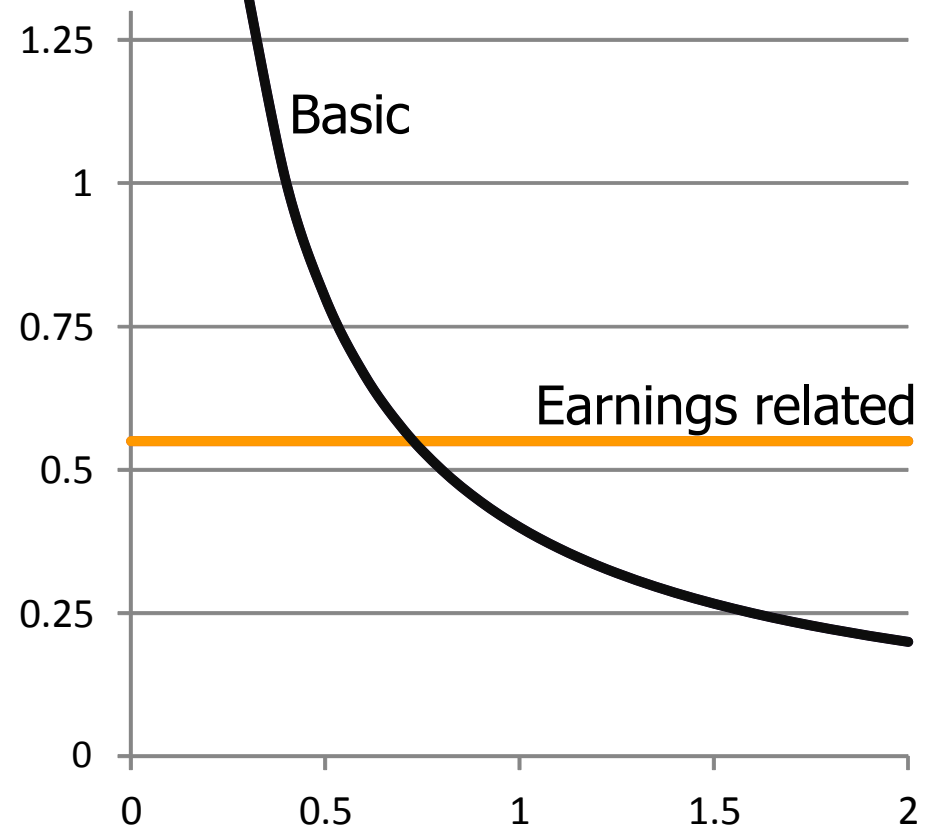
- Different degrees of emphasis on the alternative objectives of **adequacy** and **insurance/savings**
- Two benchmarks:
 - universal, flat rate benefit
 - constant replacement rate

Benchmarks

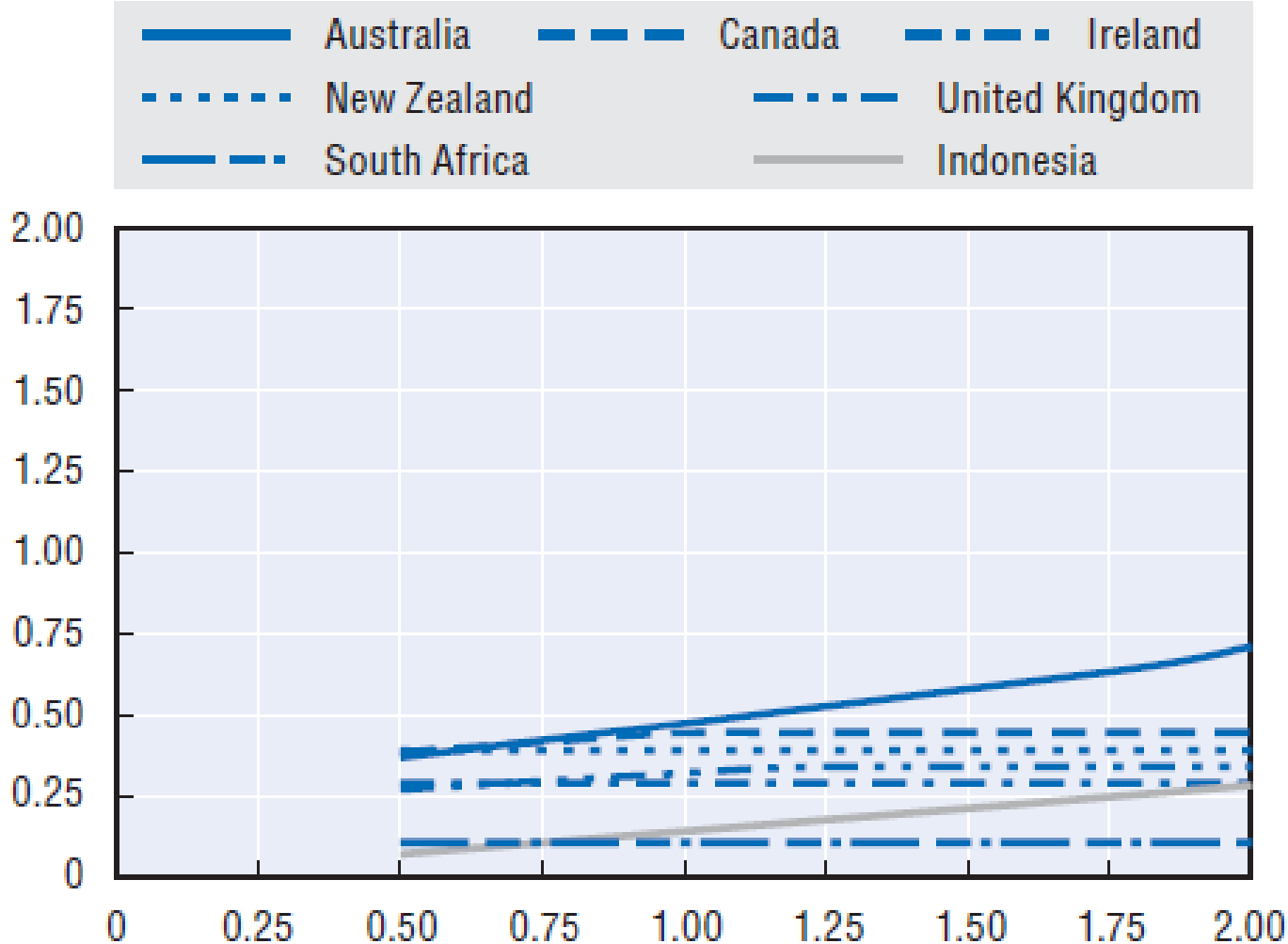
Relative pension level



Replacement rate

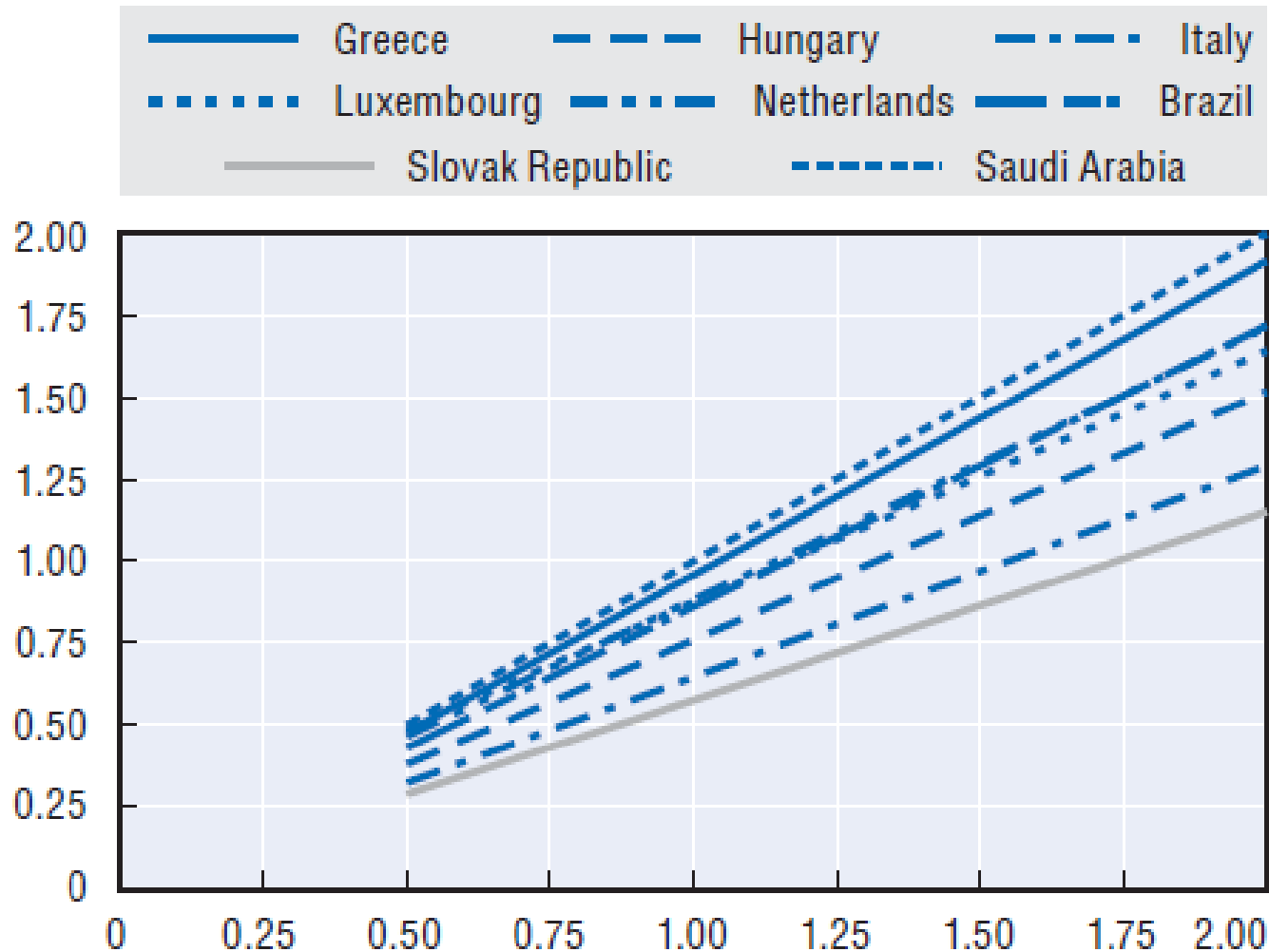


Relative pension levels: adequacy emphasis

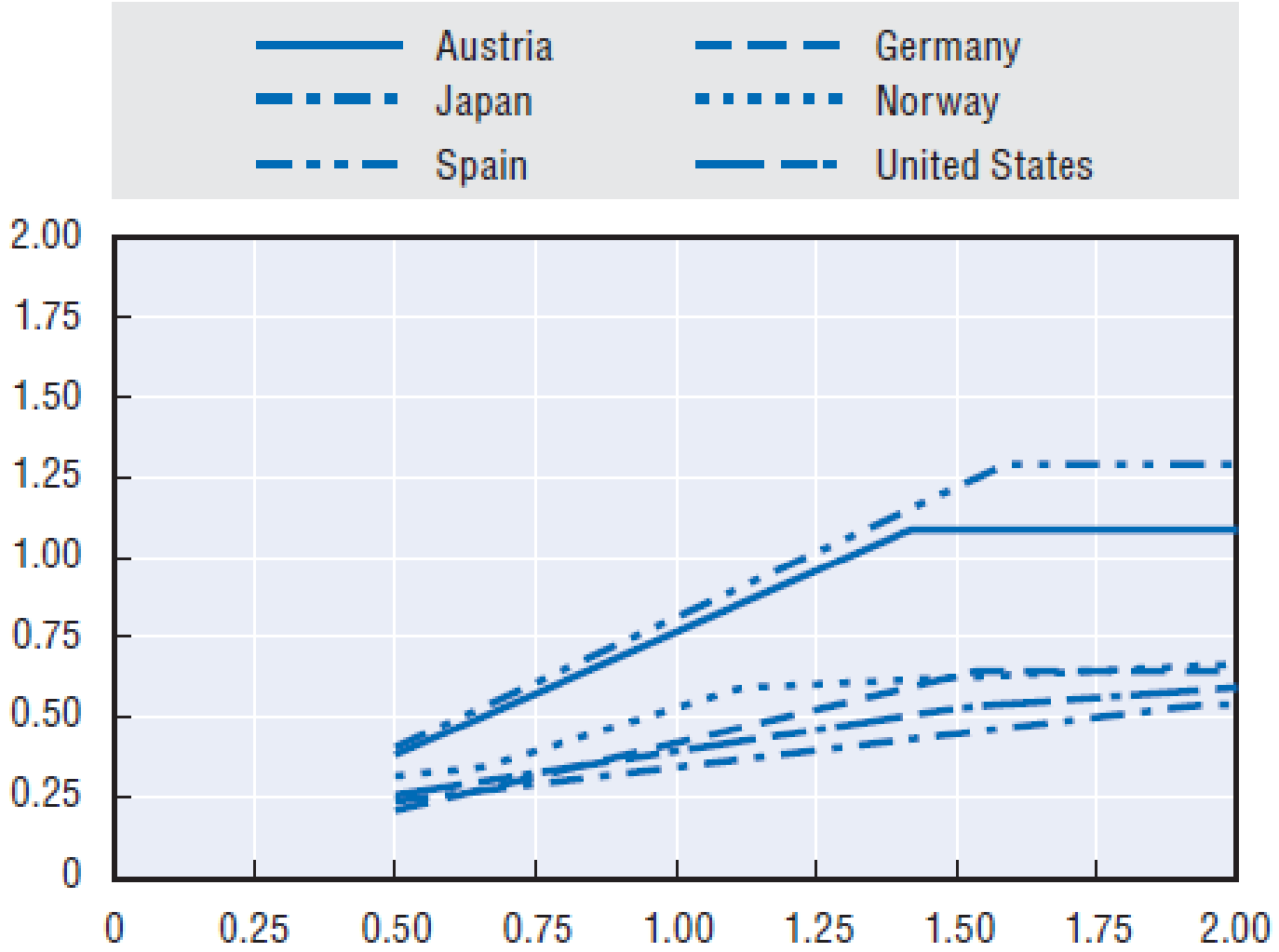


Source: OECD
Pensions at a Glance

Relative pension levels: insurance emphasis

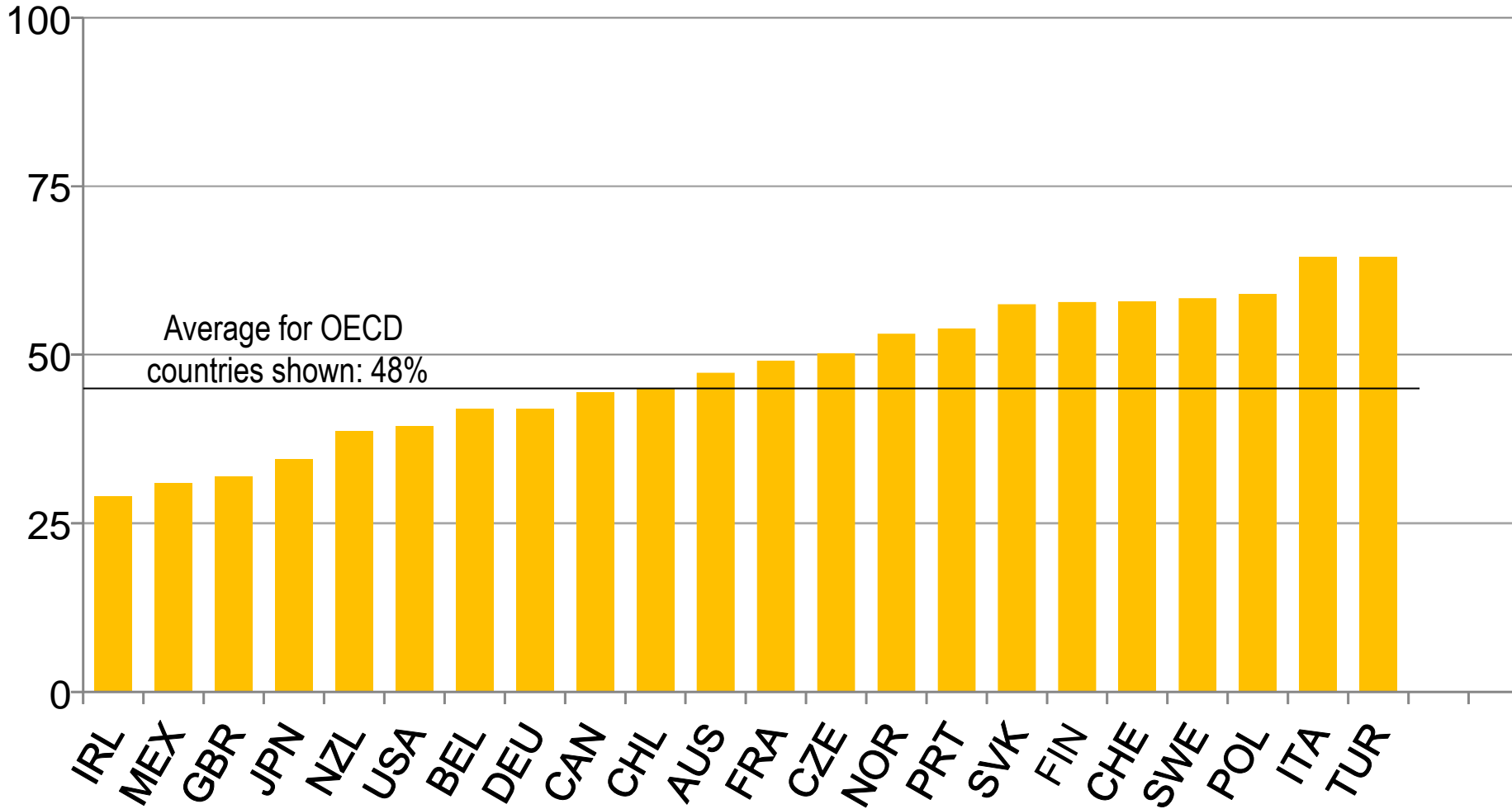


Relative pension levels: intermediate

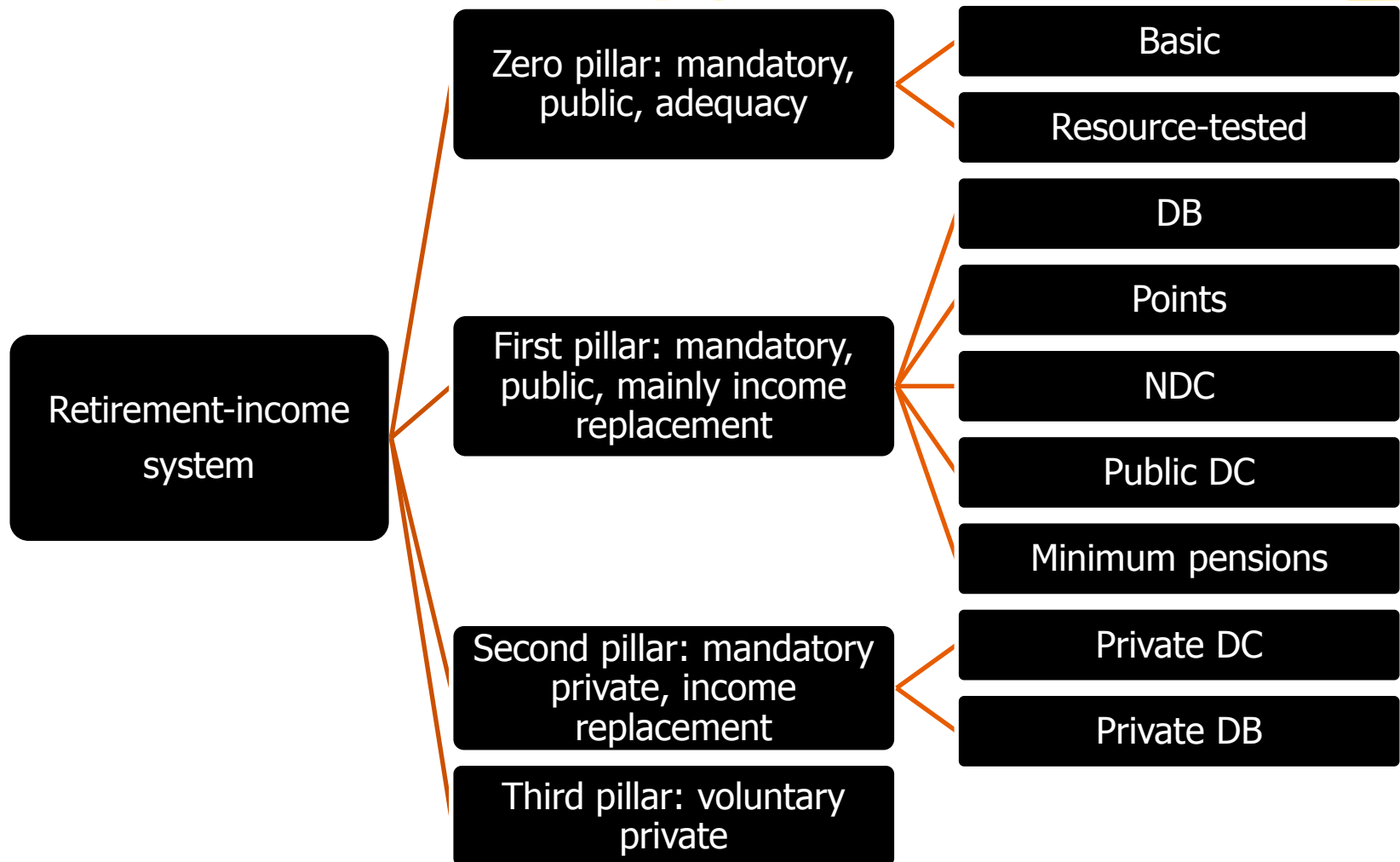


Source: OECD
Pensions at a Glance

Replacement rates



Benefit design



Benefit design 1

'Adequacy' schemes



- What is an adequate, minimum income for older people?
 - depends on family structures within a society
 - must be defined relative to living standards of rest of society (20-33% is the international norm)
 - must be affordable; avoid shifting poverty to other groups

Benefit design 1

Types of adequacy scheme



□ Basic scheme

- a flat amount per year of contributions or per year of residency
- paid to all older people (above a certain age)
- paid regardless of other income (pensions *etc.*)

□ Targeted schemes

- set a target minimum income for all older people
- paid only if other income (pensions *etc.*) does not reach the target

Benefit design 2

'Insurance' schemes



- What should be the replacement rate objective?
 - family support in old age
 - non pension income (*e.g.*, other savings, work)
 - consumption needs in retirement are lower (*e.g.*, costs of work, no children to support)
 - taxes and social contributions are lower during retirement
- A replacement rate in the pension system of less than 100% means that the same living standard can be maintained during retirement
 - a target of 50-60% for an average earner is appropriate

Benefit design 2

Retirement-income objective



- Ideal replacement rates are higher for low-income workers than for higher-income
- For high-income workers
 - ▣ a ceiling on earnings that are eligible for pension benefits
 - ▣ at the lower end of the international 'norm' (around 125-200%) of average earnings is appropriate
- For low-income workers
 - ▣ use 'adequacy' schemes to boost replacement rates

Benefit design 2

Types of insurance scheme



□ Earnings-related:

- pension value depends on number of years of contributions and individual earnings
- variants: pure defined benefit (DB), notional accounts, points

□ Defined contribution:

- pension value depends on contributions paid in and investment returns that they earn

Benefit design 2

Country practice: mandatory schemes

	OECD (24)	ECA (10)	LAC (9)	MENA (10)
Public				
None	3	-	-	-
DB/points	15	8	2	10
NDC	3	2	-	-
Private				
DB	3	-	-	-
DC	5	5	8	-

Some equations

□ Defined benefit

$$DB = \sum_{i=0}^R w_i (1+u)^{R-i} a$$

□ Points

$$PP = \sum_{i=0}^R \frac{w_i v_R}{k_i} = \sum_{i=0}^R \frac{w_i v_i}{k_i} (1+x)^{R-i}$$

□ Notional accounts

$$NA = \sum_{i=0}^R \frac{w_i c}{A} (1+n)^{R-i}$$

□ Two identities

if $u = x = n$

then $a = v / k = c / A$

Benefit design 2

Defined benefit schemes



- Target replacement rate sets the 'accrual rate':
 - pension value as a percentage of individual earnings resulting from a years' contributions
 - *e.g.*, a 60% replacement rate implies 1.5% annual accrual rate x 40 years' contributions
- Accrual rates are best 'linear'
 - that means the same accrual rate for all years and at all ages

Benefit design 2

Defined benefit schemes



□ Earnings measure:

- 'final' salary used to be very common
- now countries have moved to lifetime average salary

□ Explanations:

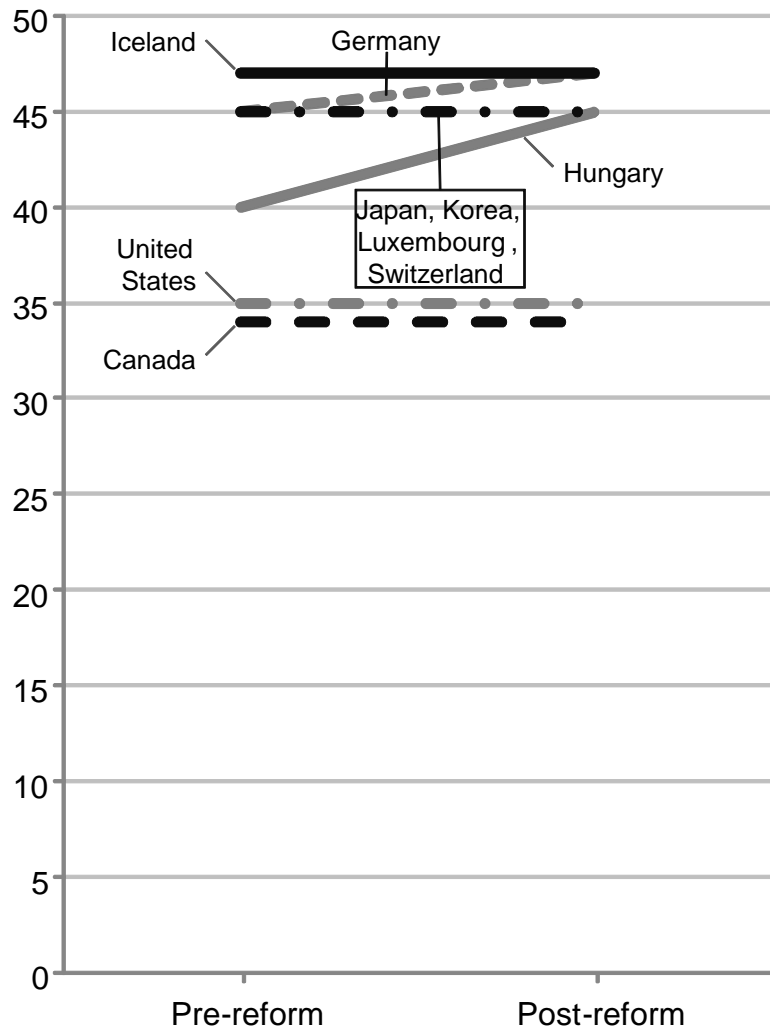
- improved record-keeping
- computerisation makes lifetime calculations easier
- final salary no longer needed to protect against effects of inflation between earning rights and retirement

□ Problems of final-salary schemes:

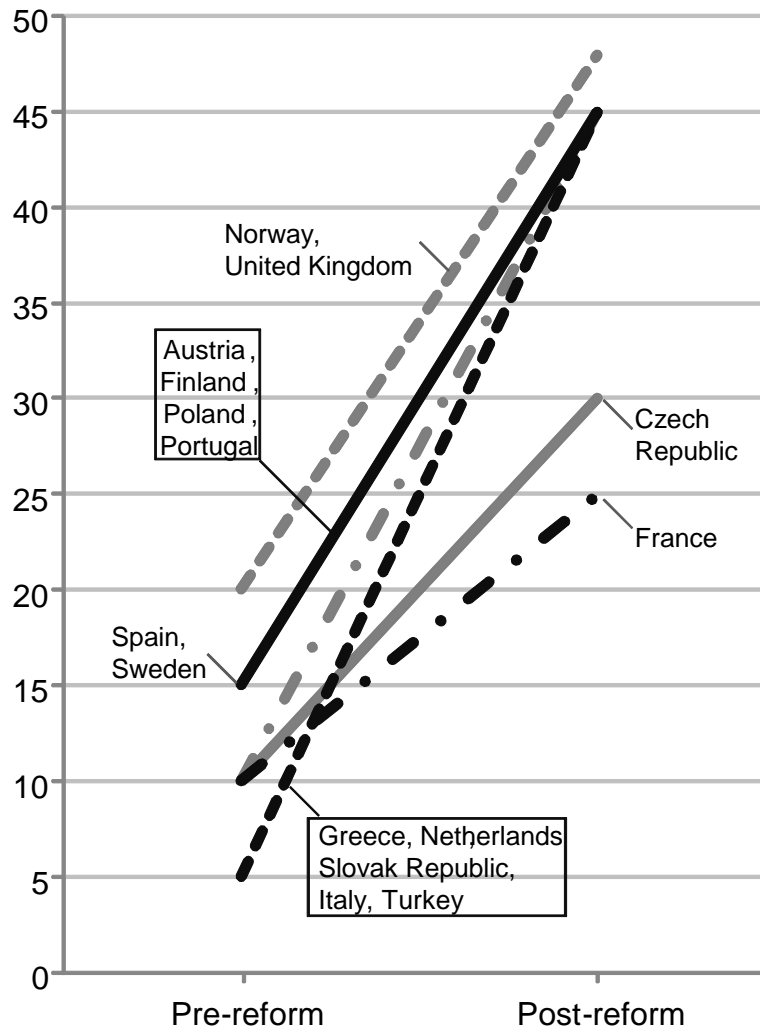
- distributional effects
- strategic manipulation
- costs

Earnings measures

Number of years of earnings in pension calculation



Number of years of earnings in pension calculation



Benefit design 3

Indexation



- Indexation:
 - automatic adjustment of pensions in payment to reflect changes in costs of living or standards of living
 - **not** the arbitrary result of annual negotiation
 - without adjustment, purchasing power of pension can decline quickly: indexation ensures adequacy in a dynamic sense
- Few countries had automatic adjustments until the 1970s
 - then, high inflation led all industrialised countries to adopt automatic indexation

Benefit design 4

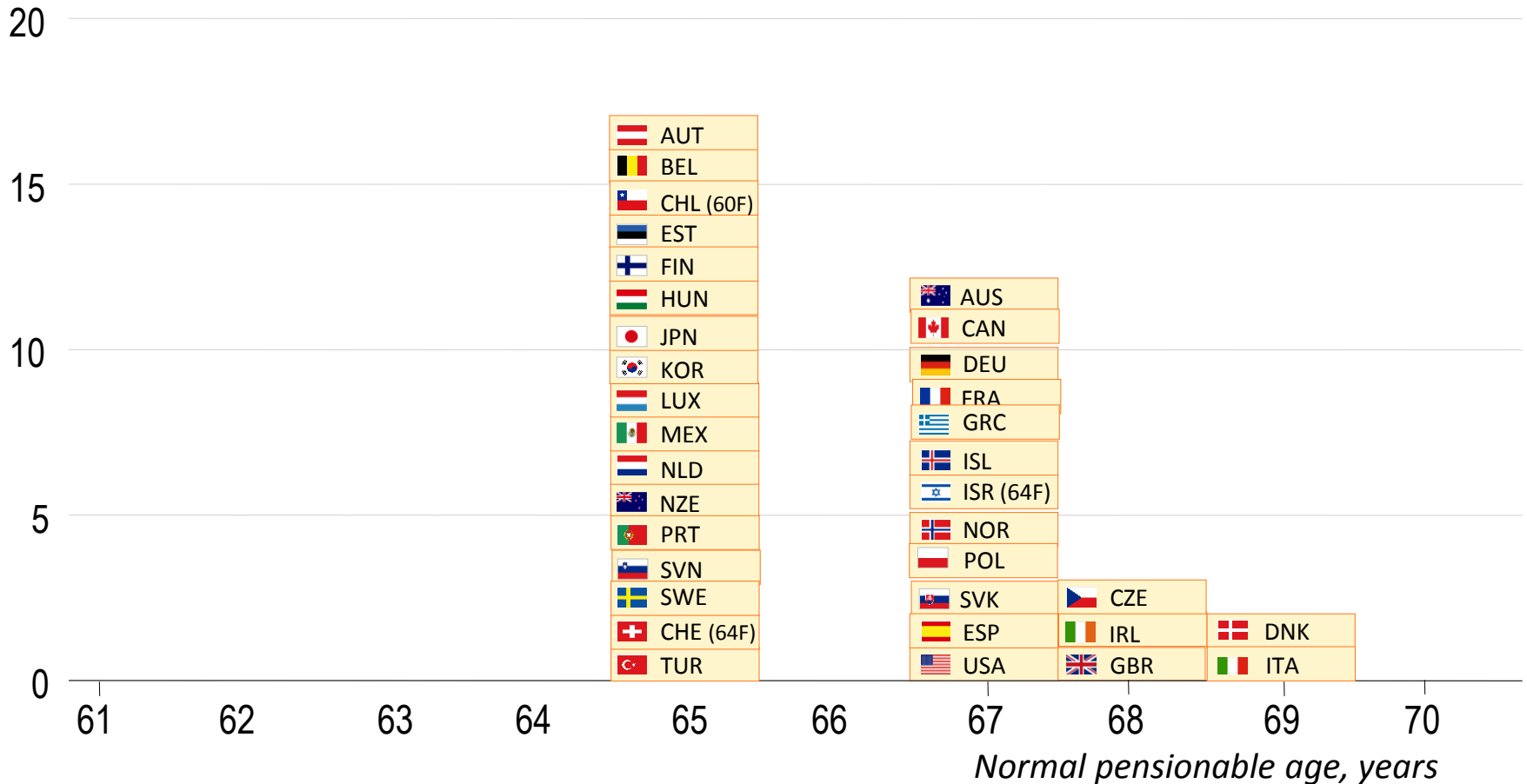
Pension eligibility age



- All pension systems have a 'normal' pension eligibility age (even if people often retire earlier)
- There are no guiding principles as to what this should be
- Therefore, examine what other countries do
 - 'normal' pension eligibility age
 - life expectancy at that age

Pension eligibility ages

Number of OECD-34 countries

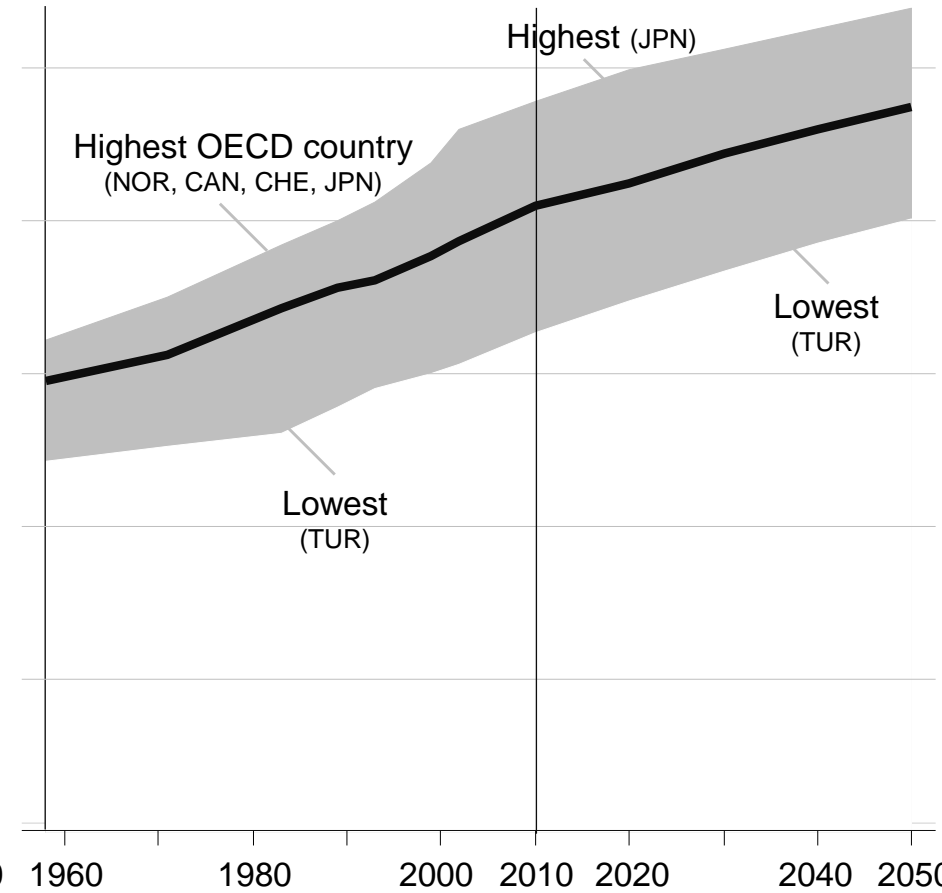
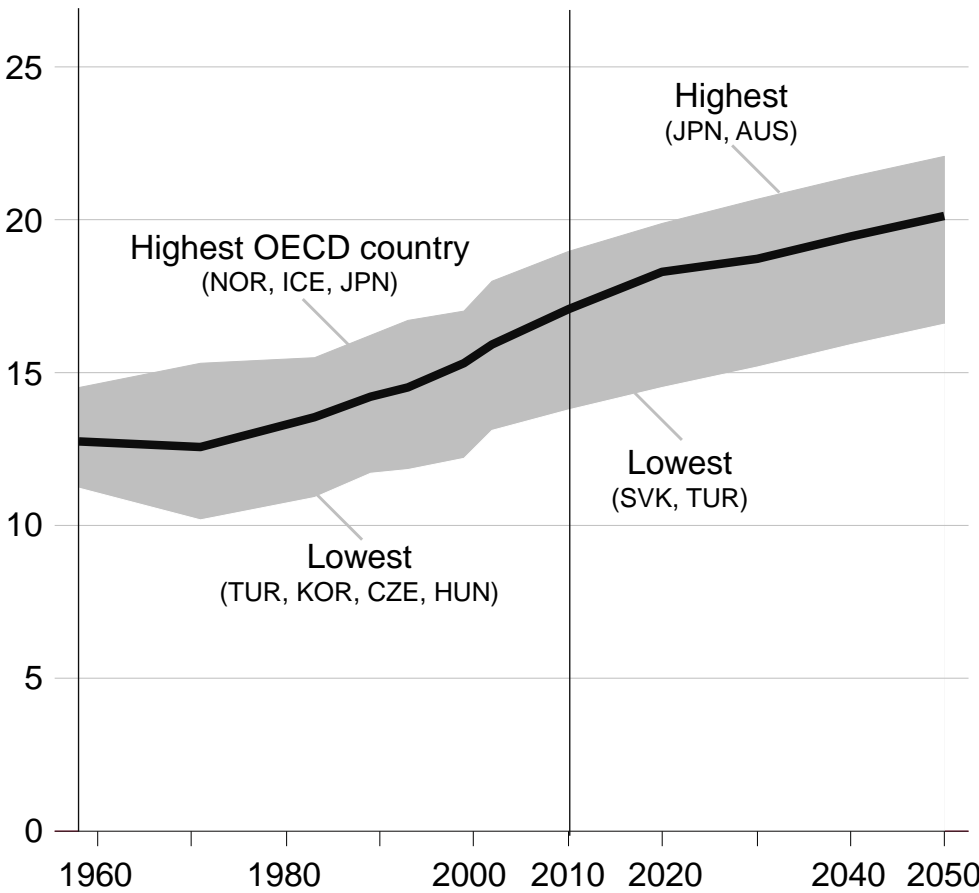


Trends in life expectancy at age 65

Additional years
of life expectancy

Men

Women

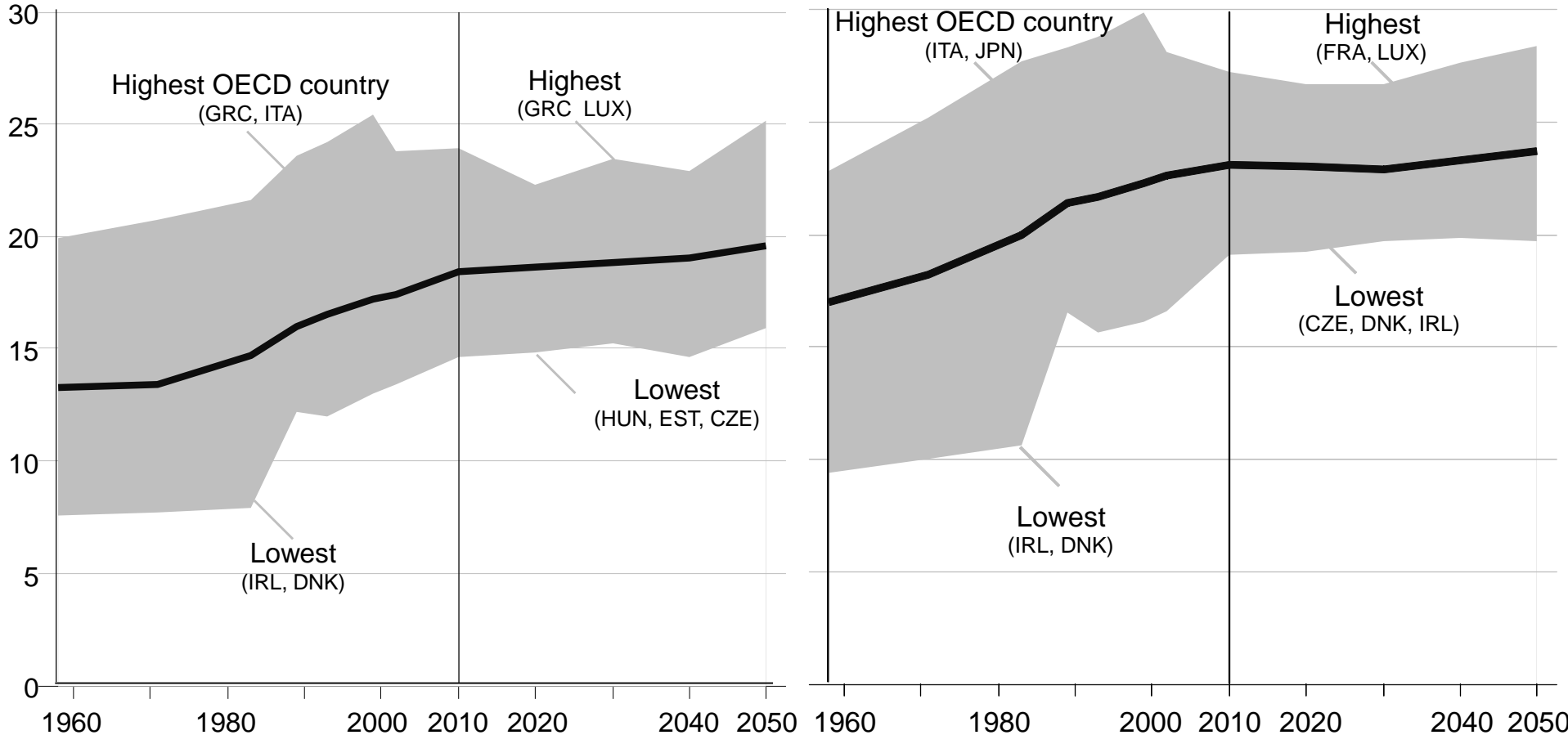


Trends in life expectancy at normal pension age

Men

Women

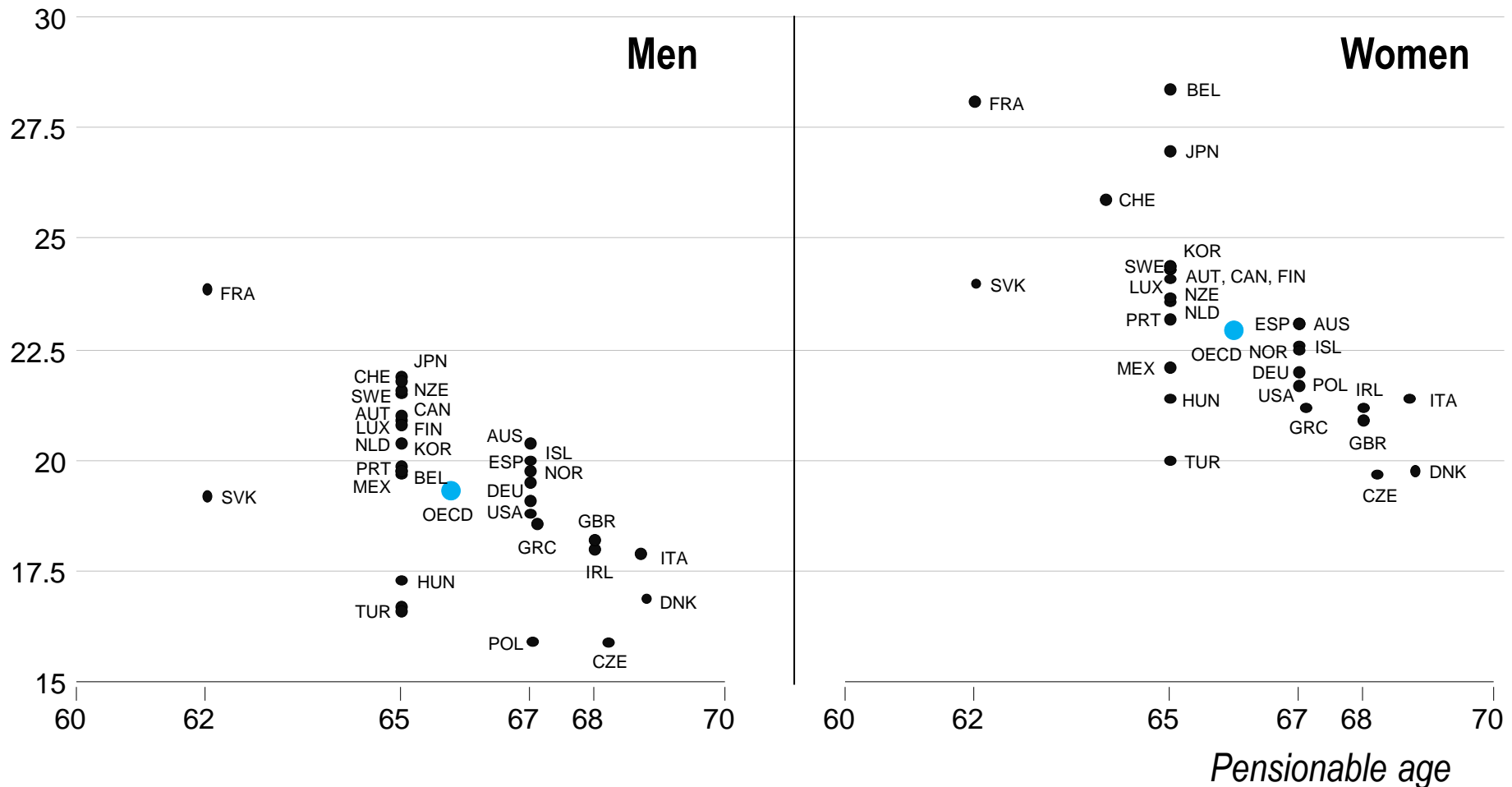
Additional years
of life expectancy



Benefit design 4

Pension age and retirement duration

Life expectancy at normal pension age, years



Benefit design 4

Pension eligibility age



- Normal pension eligibility age should depend on life expectancy
 - across countries
 - in one country over time
- Flexibility in retirement may be desirable
- But benefits for early retirees need to be adjusted to reflect the longer period for which they are paid

Financing pensions 1



- A general principle:
 - 'Adequacy' pensions should be paid for from the central government budget
 - 'Insurance' pensions should be self-financing, that is paid for out of contributions from individual members and employers
- In defined-contribution, 'insurance' pensions this is simple to achieve
 - the contributions made by or on behalf of each individual member will automatically equal the benefits that he or she receives

Financing pensions 2



- In defined-benefit and other earnings-related schemes, this is more complicated to achieve
- Actuarial/economic techniques can be used to show which combinations of parameters and rules are feasible
- Three key parameters
 - target replacement rate
 - pension eligibility age
 - contribution rate

Defined contribution pensions



- Value of pension is not set by the government
- Instead, it depends on the performance of the investments into which contributions are put
- Outcomes are uncertain because capital markets can be volatile

Diversification



- 'It is the part of a wise man to keep himself today for tomorrow, and not venture all his eggs in one basket' (Miguel de Cervantes, 1605, Don Quixote)
- Pay-as-you-go public pensions:
 - sustainable rate of return = earnings growth + employment growth
- Funded pensions
 - rate of return in capital market directly or indirectly affects pension value
- Think of pension package as a 'portfolio' of different 'assets'

Diversification

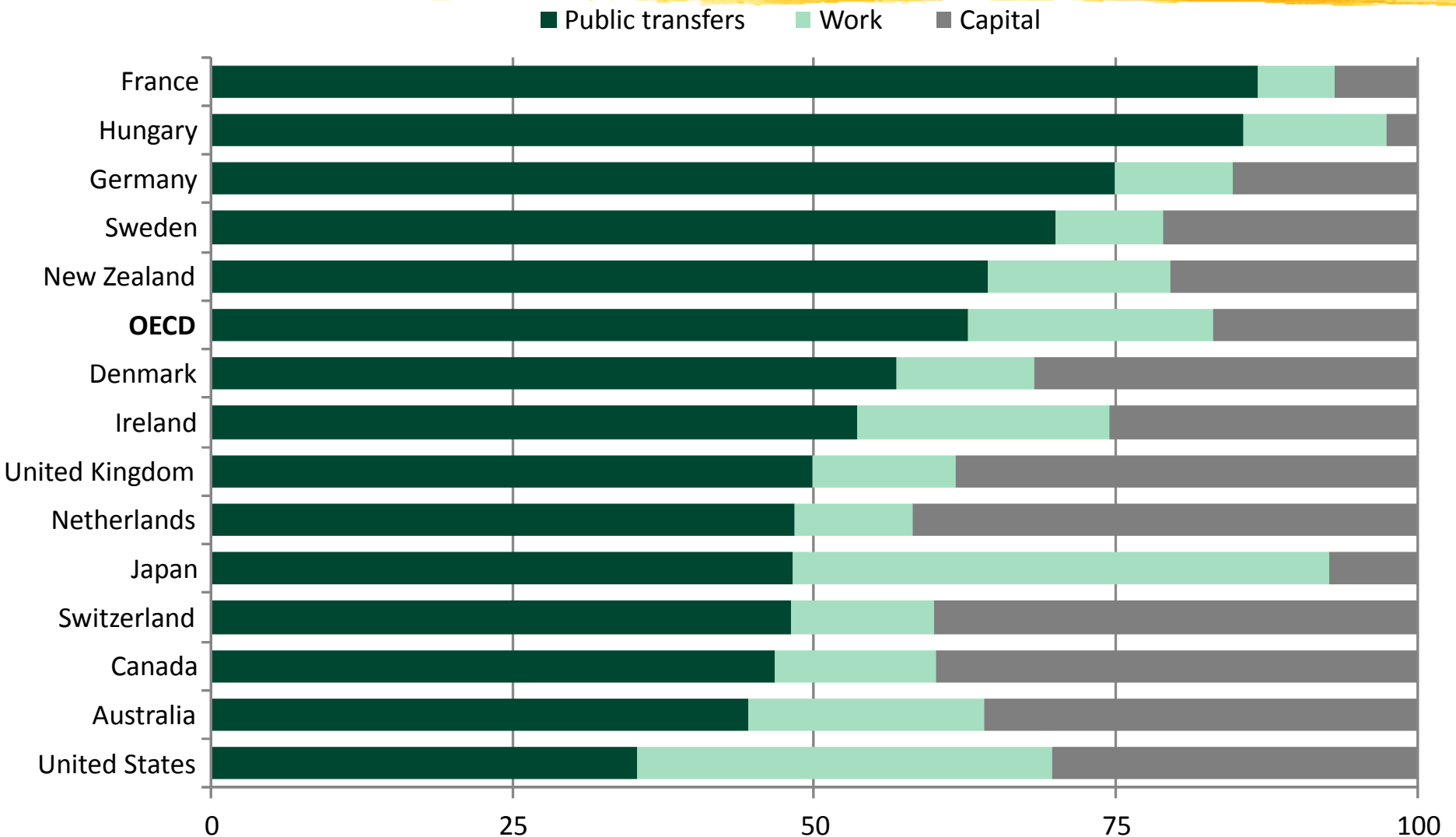
Correlation between real earnings growth and real return on 'balanced'* portfolio

Investment portfolio	Canada	France	Germany	Italy	Japan	Sweden	United Kingdom	United States
Domestic	21.2 (34.4)	-9.7 (66.9)	-8.6 (76.1)	-22.0 (38.1)	8.3 (69.2)	12.4 (58.2)	-28.2 (15.3)	3.5 (86.1)
OECD-8	16.3 (47.0)	-26.0 (24.2)	-14.6 (60.3)	1.9 (93.4)	-15.2 (50.0)	8.8 (69.7)	-11.6 (60.8)	4.8 (83.3)

Note: 'Balanced' portfolio comprises 50% equities, 50% government bonds. 'Domestic' includes only home capital markets, OECD-8 diversifies investments between all countries shown.

Correlation coefficient and p-value in per cent

International experience



Principles of pension design



- Adequacy
 - ensure that all older people, regardless of their career history, have enough money to survive
- Self-financing
 - insurance benefits should be financed wholly from contribution revenues without support from the central budget
- Secure
 - pensions promises are sustainable and affordable
 - pensions are protected against inflation
- Transparent
 - people know what they can expect in retirement income
- Efficient
 - administration is effective and costs are as low as possible
 - avoids distorting economic choices (*e.g.*, savings and retirement decisions)
 - limits opportunities for 'gaming' the system

Issues



- What level should the adequacy pension be?
- What type of adequacy pension?
- What type of insurance pension?
- What target replacement rate?
- What pension eligibility age?