



Designing the pension system: conceptual framework

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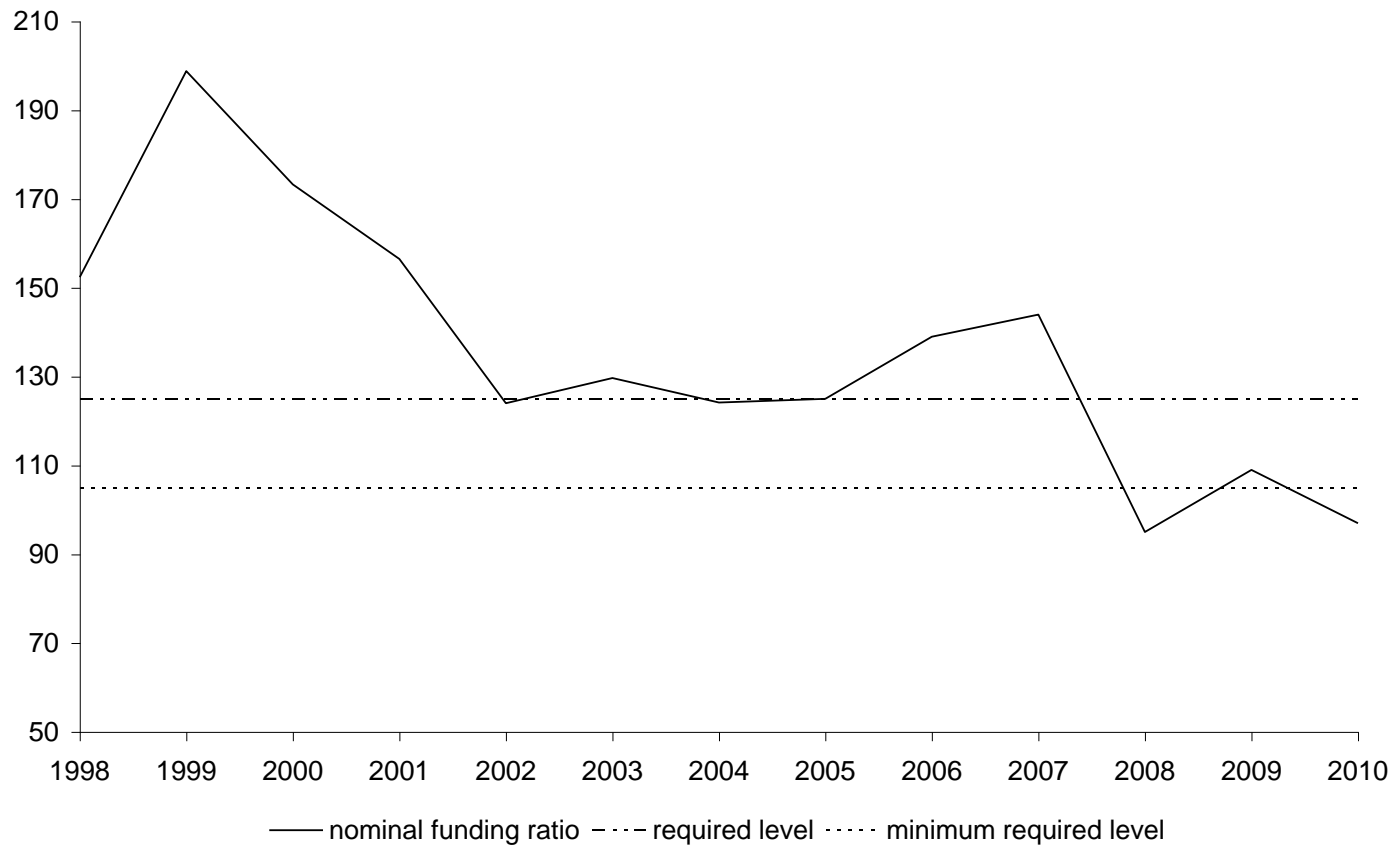
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The Hague, October 7, 2010

funding ratio of Dutch pension funds



Dutch system in nutshell

- corporatist pension funds
 - predominantly industry wide funds
- pension traditionally defined benefit
 - earnings related
 - and indexed to prices or wages
- since 2000: hybrid system
 - “hard” nominal entitlement
 - “soft” ambition for indexation to prices and wages

- Summer 2010: too low funding for most pension funds
 - many funds under tight supervision by The Netherlands Bank
 - recovery up to 105 funding ratio in 5 years
- Fall in funding ratio
 - since beginning of 2010 decline by 12 points
 - decomposition
 - equity: 0
 - bonds: + 3
 - liabilities: + 15
 - » interest rate down, life expectancy up
 - note that this concerns funding of nominal entitlements only
 - so at 100% no funding left for any future indexation to prices and wages
 - “real funding ratio” well below 100!
 - note: 20 years of no indexation halves your pension relative to wages
 - policy debate in the Netherlands should go beyond the issue of cutting nominal entitlements

Rethink the pension system



Pension system = mapping *functions x institutions*

Functions

1. facilitating life-cycle financial planning
2. insuring idiosyncratic risks
3. smoothing macroeconomic risks

Institutions

- a. markets
 - insurance companies
 - annuity markets
- b. government
- c. pension funds

no unique solution: alternative models for pension system

1. facilitating life-cycle financial planning

- **smoothing consumption over the life-cycle**
- **adequate consumption at old age**
- **why? Failures in individual behaviour: “internalities”**

2. insuring idiosyncratic risks

3. smoothing macroeconomic risks

three functions

1. facilitating life-cycle financial planning

2. insuring idiosyncratic risks

- **Pooling of intragenerational risks, in particular longevity risk**
- **Insuring bad luck (at old age): intragenerational distribution**

Why?: imperfect insurance markets (adverse selection)

3. smoothing macroeconomic risks

three functions

1. facilitating life-cycle financial planning
2. insuring idiosyncratic risks
3. smoothing macroeconomic risks
 - intergenerational risk sharing of systemic risks (shocks in financial capital, human capital, demography)
 - Why? “Limited liability of human capital” and incomplete markets: future generations cannot trade before birth

- Our focus is on intergenerational risk sharing
- Note that poverty alleviation is element of each function:
 1. life-cycle saving should ensure sufficient income at old age,
 2. insurance of idiosyncratic risks at old age
 3. poverty alleviation may involve intergenerational transfers as well (e.g. introduction of PAYG systems)

- allocate risks according to risk tolerance

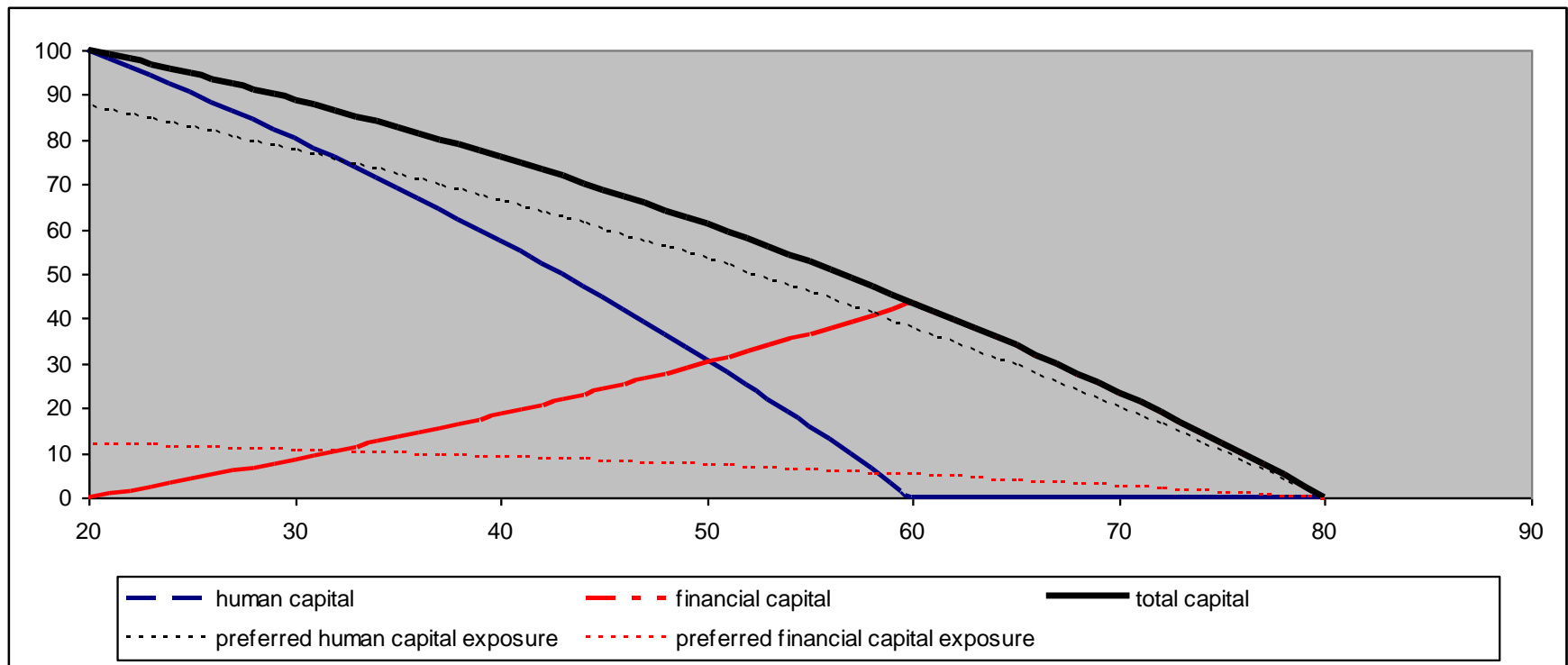
$$\tilde{W}^i = \left(\frac{1}{\theta^i} / \left(\sum_{j=1}^N \frac{\alpha^j}{\theta^j} \right) \right) \tilde{W}$$

- coefficient of relative risk aversion

$$\theta^i$$

- Benchmark: “perfect solidarity” : under uniform risk aversion(CRRA) individual’s share equally in risks
- habit formation: put less risks to the old
- non CRRA: put less risks to the poor

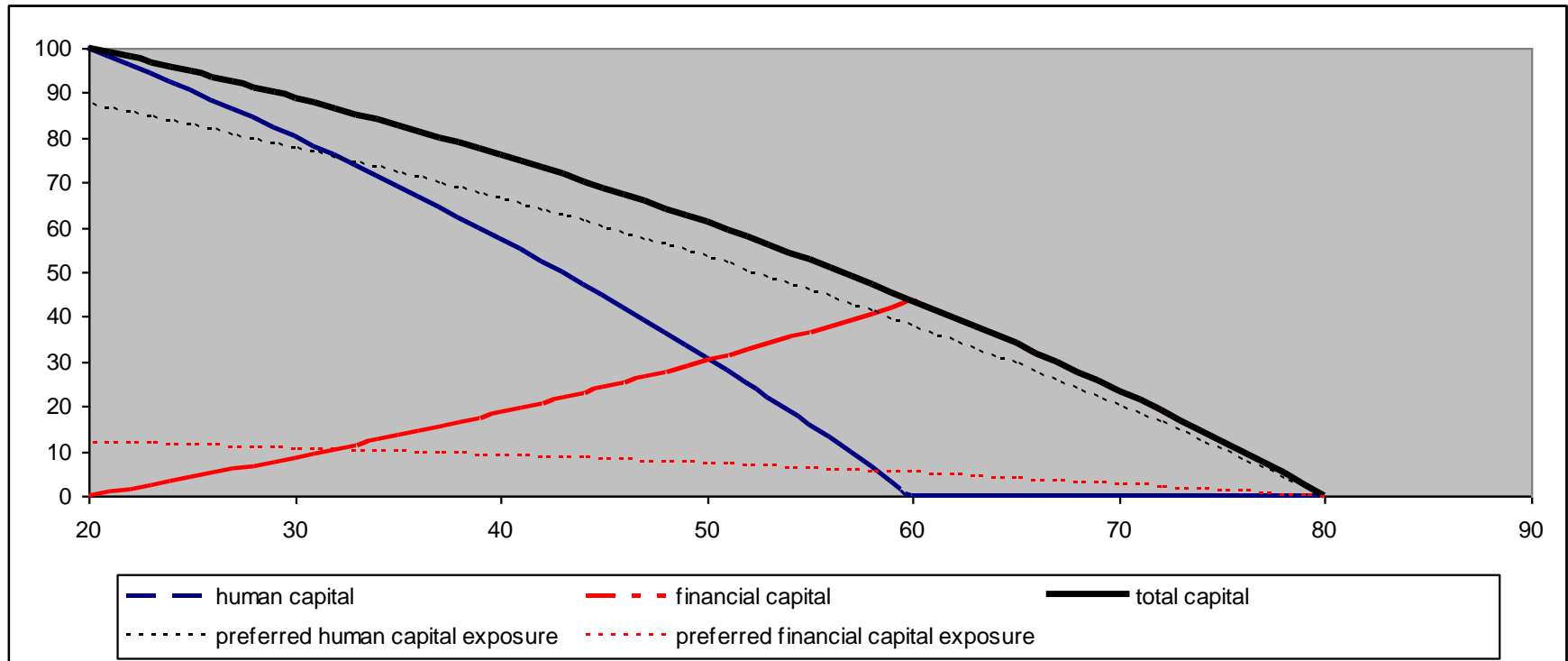
Merton & Samuelson: constant portfolio over the life cycle



- How large are the aggregate risks?
 - financial wealth 15 %
 - human capital wealth 85 %
 - current generations 20%
 - future generations 65 %
 - plus other risks
 - demography (fertility, longevity)

Under exposure of financial capital up to age of 32, thereafter under-exposure of human capital

=> need for wage linked bonds (see also presentation Lans tomorrow)



- pension system should smooth shocks in financial wealth for the elderly
- but human capital is (even more) important, and risky too
 - distinguish human capital of current generations (H)
 - can – in principle - be traded on financial markets
 - and unborn generations (U)
 - non tradable on financial markets
- if all shocks in wages are permanent that H and U can be lumped together;
 - but there are temporary shocks (credit crisis)
 - and shocks specific to future generations (climate change, ageing...)

- Young and unborn generations cannot engage in risk sharing due to *"limited liability of human capital"*
 - human capital (= future wages) cannot be used as collateral in the absence of slavery
 - moral hazard because :
 - less labour supplied if pension burden too high
 - refuse to pay deficits in individual accounts (option of bankruptcy)
 - this puts a floor to the downside risk that younger generations can bear on financial markets
 - furthermore, unborn generation are unable to engage in a risk contract before birth

- Government is better able to commit young and future generations, and thus to solve for the limited liability of human capital, but to some extent only
 - but even here: moral hazard in the form of less labour supplied if pension contributions area high
 - and future generations may vote by voice or feet :

- how to take risks on the balance sheet?
 - taxes on human capital/income and financial capital/income
 - distortionary impact can be reduced by
 - cash flow treatment (EET) of pensions !
 - making if tax rates and transfers contingent on the state of the economy: this requires risk management in budgetary policies
 - directly buying equity
 - and issue wage linked bonds
 - => political risks
 - risk to governance if government owns equity
 - better swap risks?

Corporatist solution

- mandatory participation in pension funds
- may solve limited liability of human capital up to the extent that pension funds can extract rents due to
 - specific human capital
 - costs of leaving the pension fund (imperfect portability)
 - fiscal subsidies to participation
- this allows for some intergenerational risk sharing

- DB and DC are unfortunate concepts; better use “open” and “closed” individual accounts
 - closed individual account:
pension claim is fully specified in term of assets traded on financial markets; no net claim on pension fund
 - open individual account:
net claim on pension fund (on behalf of future participants)
- pro’s and con’s
 - transparant, explicitly priced and portable
 - no solvency requirements to fund
 - fund may create new assets and thus contribute to risk sharing, in particular trading wage risks and longevity risks

Challenges to the Dutch system

- Coming from system of intransparent and implicit open accounts system:
 - make pension contract more transparent by explicit contracts
 - abolish system of 'hard' nominal entitlements and "soft" indexation
 - allocate financial risks explicitly to participants ("15%")
 - optimally, keep link of pensions to wages (solidarity / risk sharing) ("85%")
 - supported by wage linked bonds or swapping human capital and financial risks by government
 - pension contracts should be
 - in real terms (not nominal)
 - limit downside risk to the young and future generations because of limited liability => solvency requirements
 - more risk for the young and relatively safer pensions to the old (habit formation)
 - improve tailoring of pensions to individual needs
 - allow for more choice