

# Financial institutions and innovative pension products in Europe

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# Outline

- Diversity of pension systems worldwide
  - Public pay-as-you go (PAYG) schemes
  - Corporate defined-benefit (DB) schemes
  - Individual defined-contribution (DC) schemes
- Main policy questions
  - Optimal risk taking
  - Collective versus individual decision making
  - Collective versus individual risk taking
- Research
  - Base case model
  - Developments and gaps in the literature

# Outline II

- Required European research infrastructure
  - Exchange of scholars
  - Access to the most relevant data
  - Facilities for experimental research
  - Information on institutional arrangements
  - Interaction with the industry
- Potential policy contributions questions
  - Adequate pension products and defaults
  - Institutional innovation through hybrids between DB and DC

# Pensions around the world

	The Netherlands	Germany	France	Italy	Spain	Swiss	UK	US
	% of current pension income							
1 <sup>st</sup> pillar	50	85	79	74	92	42	65	45
2 <sup>nd</sup> pillar	40	5	6	1	4	32	25	13
3 <sup>rd</sup> pillar	10	10	15	25	4	26	10	42

Source: Börsch-Supan (2004)

# PAYG systems in the large continental European countries

- Large PAYG systems are not sustainable in current form
  - Vulnerable to lower fertility and increase in life expectancy
- More funding
  - Less investment in human capital calls for more investment in financial capital
  - Better diversification of financial, political and demographic risks
- How more funding?
  - Focus PAYG on poverty alleviation in old age
    - Lower benefits for middle- and higher incomes
    - Higher age at which benefits become available
  - Gradual reforms to protect currently old
    - Incomplete indexation or gradually higher retirement age

# Corporate defined-benefit plans

- Guarantees (DB) become more expensive
  - Aging and maturing of pension schemes
    - Pension risks dominate core activities
  - Accounting (IFRS) enhances market discipline
- More flexible labor markets and complete capital markets
  - Back-loading (aimed at bonding) harms portability and exposes workers to credit risk
    - Diversify risks in capital and labor markets
  - Mandatory pension contract is identical for all
- Incomplete risk-sharing contracts
  - Who owns the surplus?
  - Governance problems: conflicts of interests

# Individual DC plans as alternative ?

- Imperfect individual decision making
  - Financial illiteracy and complex decisions
  - Procrastination and lack of will power
  - Marketing costs: products are sold rather than bought
- Imperfect governance
  - Agency issues: lack of discipline
  - Lack of bargaining power buyers
  - Inadequate product design
    - Excessive choice
    - High expenses
    - Imperfect risk management (e.g. conversion risk)
- Imperfect markets
  - Lack of financial instruments to trade macro risks
    - Longevity, standard-of-living risk, inflation
    - Large transaction costs for some asset classes
  - Incomplete annuity markets: selection

# Main policy questions

- Optimal risk taking
  - How much to save for retirement ?
  - How to invest for retirement ?
  - How to consume from pension capital ?
- Collective versus individual decision making
  - Are individuals better off by making their own mistakes ?
  - Decisions often imposed, defaults set or “nudges” implemented by employer, labor unions, pensions funds,...
- Collective versus individual risk taking
  - DB insures conversion risk of the annuity, often also inflation risk largely insured
  - Such long term guarantees not available in DC
  - Political risk of undetermined property rights in current DB's



# Research findings and challenges



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# Base case models

- Optimal risk taking over life cycle
  - Under base set of assumptions (e.g. riskless human capital, flat wage profile, fixed labor supply, ...) it is a larger fraction of financial wealth in risky assets while young
  - See target date funds, life cycle funds
- Optimal insurance against longevity risk
  - Under base set of assumptions (no strong adverse selection, sufficiently fair and complete annuity markets, absence of exogenous shocks in wealth, no bequest motives) all micro longevity risk is to be insured
  - Argument in favor of buying or imposing annuities

# Base case models II

- Financial literacy and individual behavior
  - Individuals have great difficulties in answering even very simple financial questions
  - Individuals underdiversify and procrastinate
- Optimal individual decision making
  - Behaviour is strongly affected by defaults and nudges, e.g.
    - Auto enrollment in scheme
    - Default savings rule (e.g. SMART)
    - Default asset allocation
    - Default pension capital or pension income

# Welfare effects of sub-optimal contracts in base case model

## Model assumptions:

- Individuals work for 45 years and spend 15 years in retirement
  - Constant exogenous riskless labor income
  - Single risky investment opportunity: the stock market
  - Stock returns are i.i.d. normal
  - No other financial assets than pension contract
  - Smooth time separable CRRA utility with exponential discounting
  - No bequest motive
  - Standard parameter assumptions (e.g. risk aversion 5)
- (see Netspar panel paper nr. 1 for details)

# Welfare loss of sub-optimal contracts

## Measure of welfare loss:

- Annual change in consumption in reference contract that generates same welfare level as contract considered
- Reference contract: First best contract without intergenerational solidarity
- No use of equity exposure at all -8.5%
- Risk aversion level of 3 imposed -5.0%
- Implementation cost of 0.3% -1.2%
- Implementation cost of 1.0% -4.0%
- Fixed asset allocation -5.3%
- Fixed contribution rate -6.6%

# Intergenerational solidarity

- Additional risk sharing is possible if trade is possible with non-overlapping generations
- This can not be contracted on financial markets; buffers (and deficits) of collective pension schemes aim to achieve this
- Welfare gain of 6.2% due to intergenerational risk sharing in optimal (age dependent) contracts if agent participates fully in investment risk 15 years before entry to labor market
- Note that in this argument political risk is ignored !

# Stylized collective schemes

- The first best schemes have age and wealth dependent contribution rates and asset allocations.
- We now consider DC, DB and hybrid schemes that impose uniform asset allocation and contribution rates
- The premium and benefit level consist of a base level ( $\pi^b$  and  $b^b$ ) as well as adjustment levels towards recovery ( $\pi_t^a$  and  $b_t^a$ ):

$$\triangleright \pi_t = \pi^b + \pi_t^a;$$

$$b_t = b^b + b_t^a$$

$$\triangleright \pi_t^a = \beta_1 (1 - f_t);$$

$$b_t^a = \zeta_1 (1 - f_t)$$

- The asset allocation is also dependent on the coverage ratio  $f_t$  of the fund:  $x_t = \alpha_0 + \alpha_1(1 - f_t)$

# Stylized collective schemes

Model:

$$\triangleright \pi_t = \pi^b + \pi_t^a;$$

$$b_t = b^b + b_t^a$$

$$\triangleright \pi_t^a = \beta_1 (1 - f_t);$$

$$b_t^a = \zeta_1 (1 - f_t)$$

$$\triangleright x_t = \alpha_0 + \alpha_1(1 - f_t)$$

- Note that  $\beta_1 \geq 0$  and  $\zeta_1 \leq 0$ .
- A (collective) DB scheme is obtained if  $\zeta_1 = 0$ .
- Likewise a (collective) DC scheme is obtained if  $\beta_1 = 0$ .
- A hybrid scheme is obtained if  $\beta_1 > 0$  and  $\zeta_1 < 0$ .
- Hybrid schemes smooth shocks over active life and retirement, and allow for intergenerational risk sharing
- Parameters are optimized subject to a constraint on the half life of shocks in buffer



# Welfare effects collective schemes relative to first best individual

<b>Optimal parameters and welfare effects collective schemes</b>				
<b>Half-time recovery of shocks 6.5 years</b>				
	<b>Collective</b>	<b>Collective</b>	<b>Collective</b>	
	<b>DC</b>	<b>DB</b>	<b>Hybrid</b>	
<b>alpha-0</b>	18%	54%	76%	
<b>alpha-1</b>	-0,23	0,14	0,24	
<b>pi-b</b>	14%	16%	15%	
<b>b-b</b>	79%	89%	84%	
<b>beta-1</b>	0,00	0,53	0,38	
<b>ksi-1</b>	-1,65	0,00	-0,42	
<b>Welfare gain</b>	<b>-4,1%</b>	<b>0,4%</b>	<b>1,8%</b>	

# Challenges for research

- Optimal risk taking over the life cycle
  - Mean reversion in stock returns (see Gollier)
  - Risky human capital
    - Human capital as stock investment
    - Precautionary saving
  - Endogenous labor supply
    - Gomes, Kotlikoff and Viceira (2008)
    - Farhi and Panageas (2007)
  - Alternative preference specifications
    - Habit formation
    - Loss aversion

# Challenges for research II

- Optimal insurance against longevity risk
  - Incomplete annuity markets (e.g. Koijen, Nijman and Werker (2006))
  - Irreversibility of annuities and background risk (health costs, Turra and Mitchell (2005))
  - Bequest motives
  - Age dependent preferences
- Optimal decision making
  - Optimal information provision (e.g. Gneezy, Kapteyn and Potters (2003))
  - Trust and financial choice; solidarity
  - Adequate defaults and nudges
  - Individualized defaults ?
- Defined benefit, defined contribution or hybrids ?

# Innovative institutions: Stand alone funds



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# An alternative for traditional DB and DC: stand-alone funds

- Collective mandatory plan to
  - reduce marketing costs
  - protect against behavioral biases
  - set adequate defaults
  - implement more advanced strategies
  - share non-traded risks (e.g. long term conversion risks)
- Well defined property rights
- Average pay to avoid value transfer to steep careers
- No risk taking by sponsor
- Risks shared by all participants: conditional indexation
- Avoid implicit taxes: premium based on market value of new pension rights
- Portability assured

# Strengths Dutch sector funds

- Stand-alone funds
  - No credit risk sponsor: diversify risks
  - Clear ownership of assets: members rather than firms
- Delegation of complex choices to cooperatives run in the interests of members
  - Trust: Non profits and involvement employers
- Delegation to professionals who can discipline for-profits suppliers
  - Low expenses: competition at wholesale level
- Advanced risk management
  - Integrate accumulation and decumulation
- Completion of financial markets
  - Generations trade risks that are not yet traded on markets (longevity, standard-of-living)
  - Pooling of longevity risks avoids selection

# Further innovations Dutch sector funds

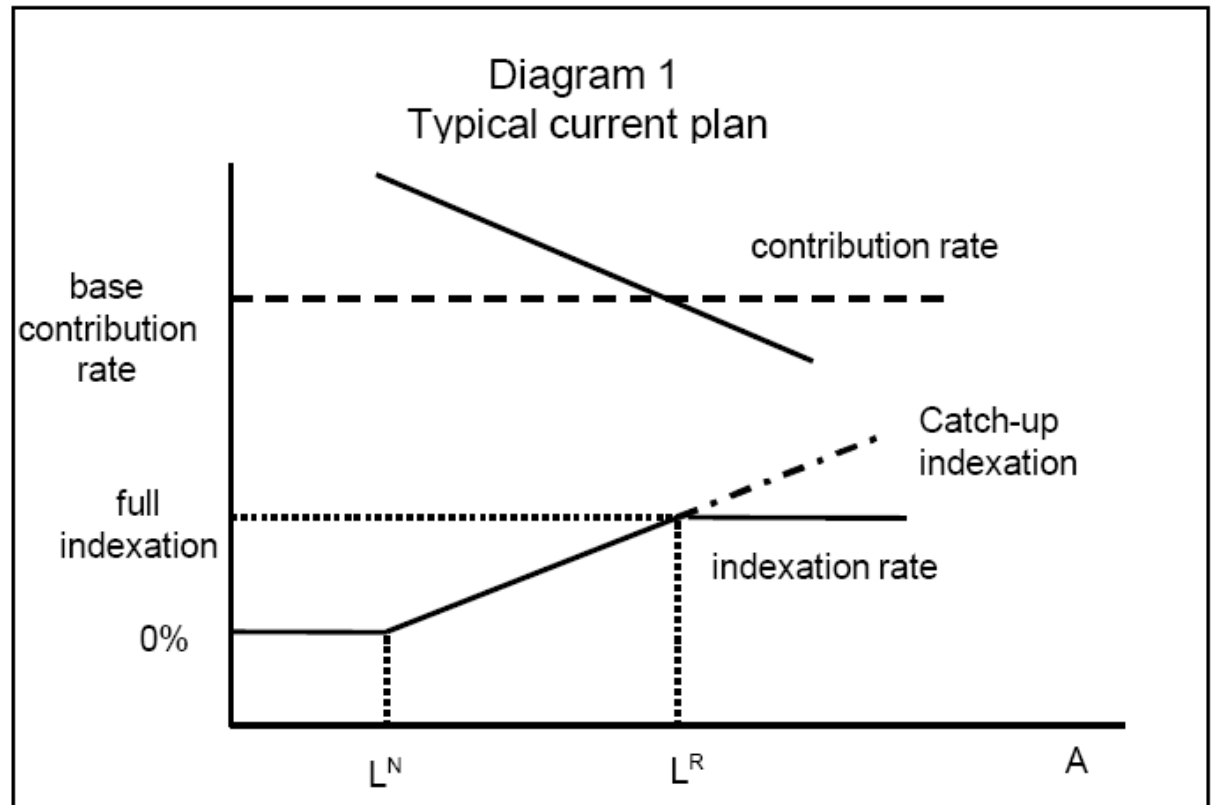
- More complete risk-sharing contracts
- More advanced risk sharing among generations
- More flexibility to absorb risks
- Link retirement age and longevity
- Mark-to-market contributions at cohort level
- Professional governance in interests of risk-bearers

# More complete contracts

- Clarify ownership 'buffers' = indexation reserve
  - What happens if (nominal) funding rate falls below 105% or above 140%?
- Policy ladder is guideline and does not have legal status
  - Political risks: discretionary power board



# Policy ladder



# More advanced risk sharing

- Now *nominal* guarantees for *everyone*
  - Wrong guarantees for the wrong people
  - Matching nominal guarantees: vulnerable to inflation risk
- Workers with ample human capital and long recovery horizon should take more advantage of risk premia
  - Consumption less dependent on pension rights
  - Allocation hedging(DB=debt)/return(equity) portfolio age-dependent
  - Portfolio composition of aging fund remains appropriate for young
- Redesign liabilities of DB schemes
  - Duration of fixed-income liabilities declines
  - Young, active participants owners
  - Supply of risk-taking capital maintained

# Flexibility to absorb risks

- Young exploit long recovery horizon: flexible premium
  - Integrate pensions with financial planning
    - More tailor-made defaults
    - Integrate individual and collective products
      - ✓ Disability and unemployment insurance
      - ✓ Housing and health care
  - Digital infrastructure to exchange information
- Flexible labor market: work effort as buffer
  - One year more work provides 8% more income during rest of life
  - More flexible, transitional labor market for elderly
  - Flexibility to move between jobs
    - Portability pension rights and human capital imply better diversification in competitive environment

# Research infrastructure



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# Required research infrastructure

- Exchange of scholars
  - Not only at senior level
  - Not only within (sub)disciplines
- Access to data sources
  - Micro data (SHARE, but linked to administrative records of government and pension providers etc.)
  - Data on European financial markets
- Facilities for experimental research
  - Questionnaires and panels
  - Laboratory experiments
  - Field experiments

# Required research infrastructure II

- Institutional information per (European) country
  - Accessible information required
    - Collaborate with OECD
  - Analysis and comparison of institutions required
    - Avoids focus on inconsequential details
    - Enhances understanding
    - Stimulates research and provides answers to policy questions
- Networks for interaction with the industry required
  - Exist at national level (MEA, CerP, Euroforum, Netspar etc.)
  - Extend to European scale

# Deliverables

- Top-quality research
- Contributions to pressing policy questions
  - Adequate advice, defaults and nudges
    - How much to save for retirement ?
    - How to invest for retirement ?
    - How to consume from pension capital ?
    - How to take incorporate behavioral factors ?
  - Adequate pension products and institutions
    - Optimal trade-off advantages and disadvantages of the many different institutional settings
    - Important input for European legislation, e.g. IORPs

# Core references:

- Bovenberg, Lans; Ralph Koijen, Theo Nijman, and Coen Teulings (2007), 'Saving and investing over the life cycle and the role of collective pension funds,' Netspar Panel Paper nr.1
- Bovenberg, Lans and Theo Nijman (2008), "Dutch stand-alone collective pension schemes: the best of both worlds?", working paper.