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The Economics of Pension Scheme Design

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Introduction

- Occupational pensions are part of employment contracts
 - They compensate workers for effort....
 - ... and fulfill firm objectives
- Good pension scheme design takes account both of firm needs and employee preferences

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Scheme design

- Central issue is efficiency, or otherwise, of compensation
 - Taxation
 - Incentives
 - Portfolio issues
 - Corporate finance?

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'Efficient' vs. 'inefficient' compensation

- Tax efficient vs. tax inefficient

- Government is a third party to all compensation contracts
- Structure of the contract affects taxation liabilities and hence the net benefits to both parties
- In the UK, individuals and companies have the right to structure their legal interactions to minimise their tax liabilities
- Pensions are tax favoured

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'Efficient' vs. 'inefficient' compensation

- Incentive efficient vs incentive inefficient

- Different compensation arrangements give workers (and firms!) different incentives
- In general, most companies probably try to arrange compensation contracts to reflect the incentive effects of their compensation
 - Promotion
 - Dismissal
 - Reward-based pay
 - Internal pay structures
- Pensions have incentive effects

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'Efficient' vs. 'inefficient' compensation

- Portfolio efficient vs. portfolio inefficient

- 'Cash is king'
 - Movie tickets analogy
 - 2 movie tickets a month worth their cash value
 - 300 movie tickets a month worth much less than their cash value
 - Pensions have interesting portfolio effects
 - Workers cannot sell their pensions or borrow against them
 - Cannot "undo" their pensions in the rest of their portfolios
 - Justifies a non-arbitrage (utility-based) approach to pension valuation in the hands of individuals
- Transaction costs-based argument
- Incomplete markets-based argument
- Selling individual movie tickets is a costly business
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Three economic perspectives are relevant to determining occupational pension type

- Labour market
 - Pensions form part of employment contracts
 - Exert some influence on employee behaviour
- Portfolio theory
 - Pensions are an asset in the hands of the employee, with some special characteristics
- Corporate finance
 - DB pensions are liabilities of the firm

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How might a firm choose a compensation contract?

- Firm maximises profit while keeping workers satisfied
 - Corporate finance issues here (risks?)
- Profit = output of worker less cost of compensation contract
 - Incentive effects important
- Worker satisfaction
 - Portfolio effects important
 - Workers cannot trade away pensions

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1. Pensions and corporate finance

- DB liabilities are largely bond-like
 - Like bonds on firm balance sheets
 - Interest rate sensitivity like (very) long bonds
- Incomplete markets important
 - Mortality
 - LPI?
 - Salary linkage

} Market incompleteness
exposes sponsor to pension
risks

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2: Pensions in the labour market

- Sorting theory
- Incentives theory
- Bonding theory (wage-tilt)
- Retirement behaviour theory

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Sorting.....

- Workers have private information about their future performance
- This affects how workers value different compensation contracts
 - Pensions
 - Salary increases
 - Promotions
- Firms can design contracts to attract desirable workers

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Sorting.....

- Worker discount rates
 - Affects how workers value the future against the present
 - "delayed gratification"
 - Pensions are more attractive to lower discounters
 - Low discounters may be better workers
 - Likely quit rates
 - Some types of pension may be more attractive to workers who plan to stay rather than to leave quickly

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Incentives.....

- Compensation changes worker incentives and hence worker effort
 - Performance-based pay
 - Seniority pay
 - Promotions
- Pensions also change worker incentives

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Bonding.....

- Pensions may bond workers to jobs
 - Reduces direct and indirect turnover costs
 - Recruitment costs
 - Direct and on-the-job training costs
 - Sociological costs
 - Empirical evidence from the US suggests that workers with pensions are less likely to leave jobs
 - Pension type doesn't seem to matter too much

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Bonding.....

- Can also induce longer tenure by 'tilting' wages
 - Form of seniority pay
 - Implies that workers at the end will be earning more than their marginal product
 - May therefore need to get them to leave
 - Mandatory retirement age
 - Pensions

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Retirement behaviour.....

- Pensions influence retirement behaviour
 - Strong retirement incentives in DB pensions
 - Raison d'être of DB corporate pensions?
 - Could use pensions to control age profile of workforce
 - DC pensions
 - Loss of employer control over retirement
 - Impact of age discrimination law?

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Pensions in the labour market

- Can be used as one of many tools to manage the workforce in a company

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3: Pensions and portfolio theory

- Life cycle models (with pensions)
- Include sources of market incompleteness
 - Unhedgeable wage, mortality risk
 - Portfolio constraints
 - Unfair private annuity market
 - Liquidity constraints
 - Taxation

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Putting it all together

- Could use a calibrated model of employee preferences to determine how different employees value their pensions
- Use this as a guide for employers when designing pension schemes

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Putting it all together

- Derive a “utility indifferent price” for pensions
 - That amount of cash which will compensate an individual in utility terms for the loss of his pension
- Derive “pension risk premia” – the discount rate that employees implicitly use when valuing the expected payments
 - IRR which equates the discounted expected value of the pension payments with the utility indifferent price

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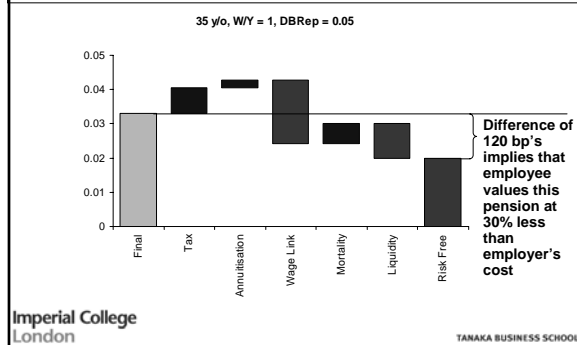
Putting it all together

- Can disaggregate pension risk premium into pieces that are the result of the different components of the pension

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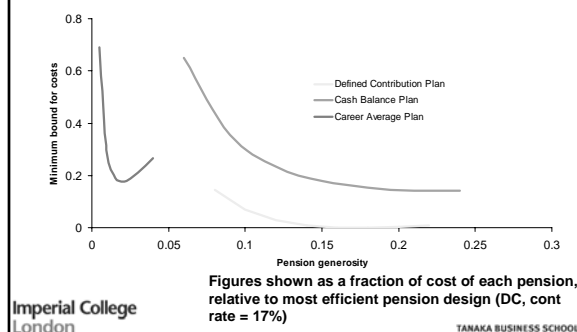
The pensions “value wedge”



The pensions “value wedge”

- Can repeat this exercise for different levels and types of pension, and determine the size of the required human capital benefits for each type and generosity of pension

Required human resource effects of pensions



Behavioural finance

- Previous work very focused on theory
 - Behavioural economics / finance important (and growing in importance)
- Much work on
 - Employment contracts
 - Pension scheme design
- Less on the interaction between the two
 - Opportunity for those who are interested!!!

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Conclusions

- Economics of pensions relies on labour economics, financial economics, portfolio theory, corporate finance and behavioural issues
- Different pension designs require different amounts of human resource savings to be efficient methods of compensation
- Lot's isn't known!!

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