Workplace pensions and remuneration in the private and public sectors in the UK

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Background

• Defined benefit pensions schemes become much less common in the private sector, but not in the public sector
• There have been a series of reforms to public service pensions under Labour and Coalition governments
• Recent (and ongoing) debate on the level of public sector pay
  – Typically ignores remuneration in the form of pensions

• Our contribution:
  – Estimate the changing value of workplace pensions in the public and private sector from 1997 to 2012
  – We incorporate changing pension coverage, life expectancy, annuity rates, workforce composition and public service pension reforms
  – Include workplace pensions into a comparison of remuneration of public and private sector workers
Motivation

Membership of employer-provided pension schemes, 1997 to 2012

Source: Authors’ calculations using the Annual Survey of Hours and Earnings
Measuring the value of workplace pensions

• We aim to measure the value to the employee of the change in their pension rights between one year and the next
  – Accrued pension rights = PDV of stream of pension income from retirement to death
  – Calculate this if left scheme now and if left in one year’s time
  – The difference is one-period pension accrual
  – Then subtract the employee’s own contributions to the pension

• This measure is known as “one-period net pension accrual”
  – Express as a fraction of salary
Methodology: DB and DC pensions

- Annual income from **DB pension**: \( B_t = \alpha TY_t \)
  - \( \alpha \) is accrual fraction, \( T \) is tenure, and \( Y_t \) is a measure of earnings (e.g. final or career average salary)

- **DB pension** accrual will depend upon:
  - Scheme rules (e.g. accrual fraction, normal pension age)
  - Number of years tenure in scheme
  - Increase in pensionable pay as a result of working another year

- Annual income from **DC pension**: annual annuity that could be purchased at age 65 given current fund value and annual real return of assets is 2%

- **DC pension** accrual will depend upon:
  - Size of employer pension contribution
  - Annuity rates
Methodology: Assumptions

- For all schemes:
  - Real discount rate: 2% (i.e. 2% higher than CPI inflation)
  - Life expectancy: ONS age/sex specific cohort life expectancies for each year, adjusted for differential mortality gradient by social class

- For DB schemes:
  - Use example scheme rules for typical (final salary) DB schemes
  - Private: NPA= 65, $\alpha=1/60^{th}$
  - Public Final Salary (pre-reform): NPA= 60, $\alpha=1/80^{th} + 3/80^{th}$ lump sum
  - Public Career Average: NPA= SPA, $\alpha=1/54^{th}$, accrued benefits revalued by CPI +1.5ppt (new NHS Pension scheme rules)
  - Pay growth: estimate average hourly wage growth (by sex/ sector/ education) observed at different ages from 1994 to 2006 in the LFS
Estimated earnings profiles (men)

Hourly wage profiles – men

Source: Authors’ calculations using data from the Labour Force Survey.
Assumed real growth in earnings (men)

Hourly wage growth – men

Source: Authors’ calculations using data from the Labour Force Survey.
Methodology: Assumptions

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  - Real discount rate: 2% (i.e. 2% higher than CPI inflation)
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- **For DB schemes:**
  - Use example scheme rules for typical (final salary) DB schemes
  - Private: NPA= 65, $\alpha = \frac{1}{60^{th}}$ Public: NPA= 65, $\alpha = \frac{1}{80^{th}} + \frac{3}{80^{th}}$ lump sum
  - Pay growth: estimate average hourly wage growth (by sex/ sector/ education) observed at different ages from 1994 to 2006 in the LFS

- **For DC schemes:**
  - Use mean sex-specific age-65 RPI-linked annuity rates in each year
Data

• Use employees aged 20 to 59 in Labour Force Survey
  – Allows us to measure earnings and characteristics of employees
  – Does not contain: pension coverage, employee or employer contributions, pension scheme tenure or scheme rules

• Impute the type of pension scheme (DB/DC/none) based on year-sex-sector-occupation-age specific coverage rates in ASHE
  – Randomly allocate same % of employees in LFS in each “cell” a DB or DC pension as have one in ASHE

• Impute mean contribution rates from ASHE using same “cells”

• Impute pension tenure for DB schemes from 2005 and 2001 BHPS
  – Define cells based on sex, sector and 5-year age bands
  – Use “hotdecking” procedure by which each person in LFS is randomly allocated pension tenure of someone in same cell in BHPS
Average value of private and public pensions

Mean one-period net pension accrual in 2012 under different example scheme rules

- NPA 60, RPI, employee cont 2010: 41.3%
- NPA 65, RPI, employee cont 2010: 34.3%
- NPA 65, RPI, employee cont from 2012: 33.6%
- NPA 65, CPI, employee cont from 2012: 18.3%
- Post Hutton, employee cont from 2012: 17.7%
- Public sector DC: 12.6%
- Private sector DB (NPA 65, RPI): 33.7%
- Private sector DC: 5.4%

Source: Authors’ calculations using the Labour Force Survey, Annual Survey of Hours and Earnings, and British Household Panel Study
Estimating the public sector pay differential

- Using LFS data we run regressions of \( \log(\text{hourly wage}) \) on:
  - Public sector
  - Age – quadratic
  - Education – detailed qualifications (6 categories)
  - Experience – different quadratic profiles by 3 large education groups
  - Region of work – 12 government office regions
  - Sex – either run separate regressions or interact all variables with sex
  - Time (in quarters) – generally pool one year of data or more

- To include value of workplace pensions, change the dependent variable to: \( \log(\text{wage + net pension accrual}) \)
  - e.g. If an individual has net pension accrual of 15%, we increase her wage by 15%

- **Percentage differential** calculated from estimated coefficient on public sector (following Halverson and Palmquist, AER 1979)
Public-private pay differential including pensions

Source: Authors’ calculations using the LFS, ASHE and BHPS.
Conclusion

• Throughout the 2000s, average value of pensions to public sector workers increased, while it decreased for the private sector
  – Due to declining coverage in private sector, and shift from DB to DC
• CPI indexation of pensions in deferral and payment significantly reduced value of workplace pensions to public sector workers
  – Public service pensions still much more generous, on average, than in private sector
• Incorporating pensions into an estimate of the public-private pay differential:
  – Significantly increases the size of the pay differential
  – Increases the variation in the differential over time
• Future trends in pay and pensions:
  – Pay: Public sector pay set to fall significantly relative to private sector
  – Pensions: Auto-enrolment boost coverage in private sector (but low contributions), implementation of Hutton reforms in 2015