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

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Jonathan Cribb and Carl Emmerson

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<http://www.ifs.org.uk/uploads/publications/bns/bn151.pdf>

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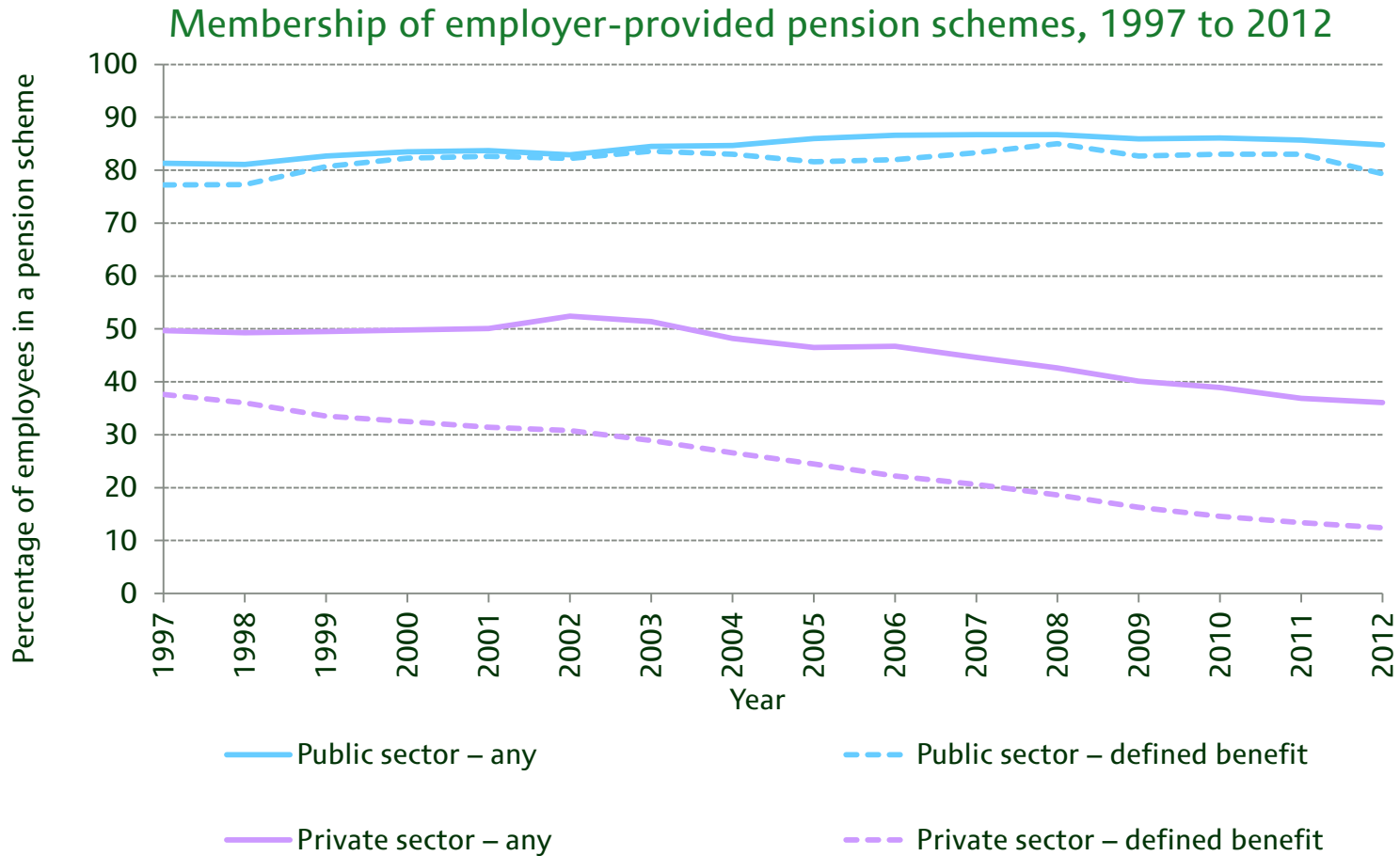
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# Background

- 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



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

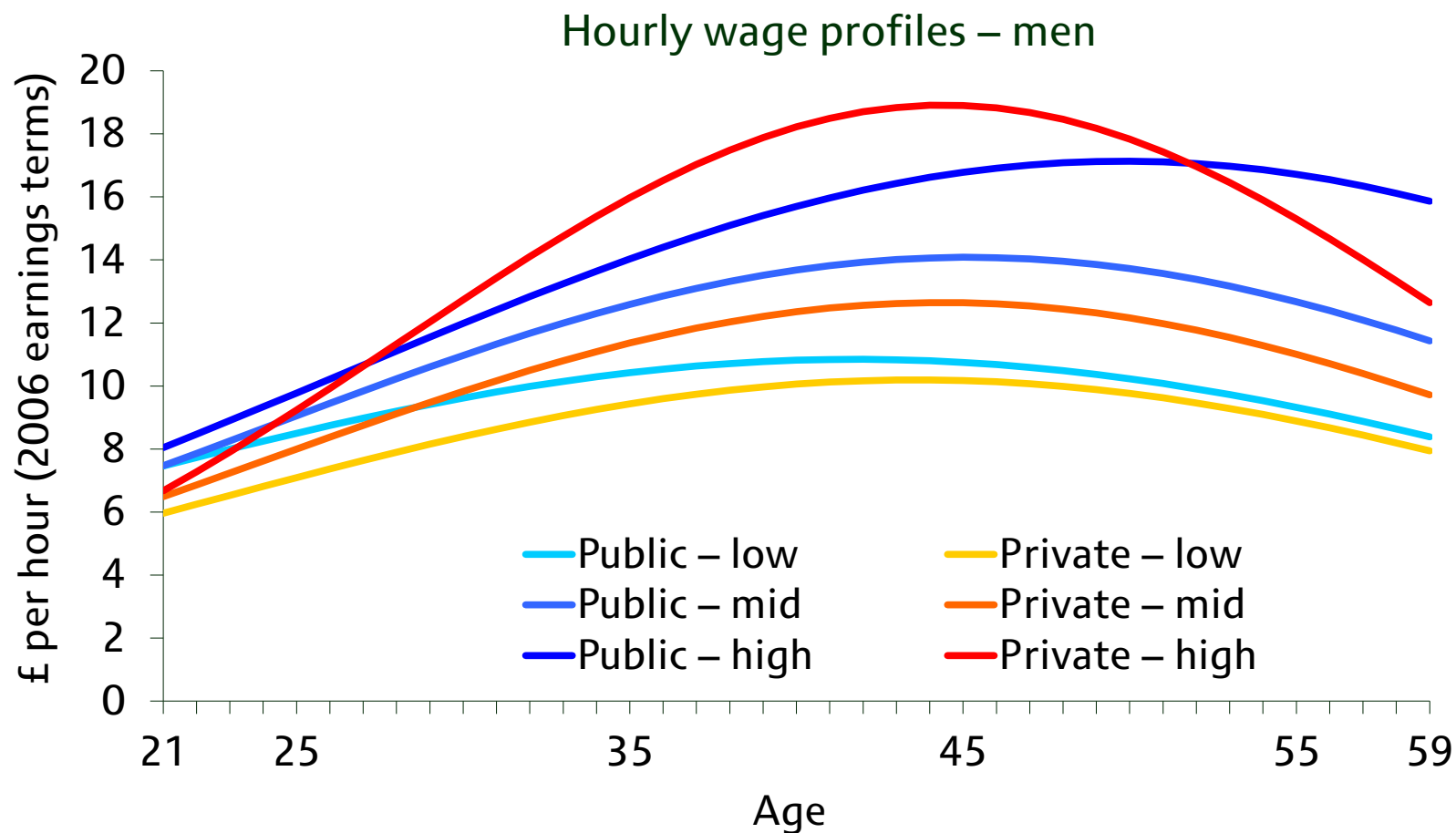
# Methodology: DB and DC pensions

- Annual income from **DB pension**:  $B_t = \alpha T Y_t$ 
  - $\alpha$  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

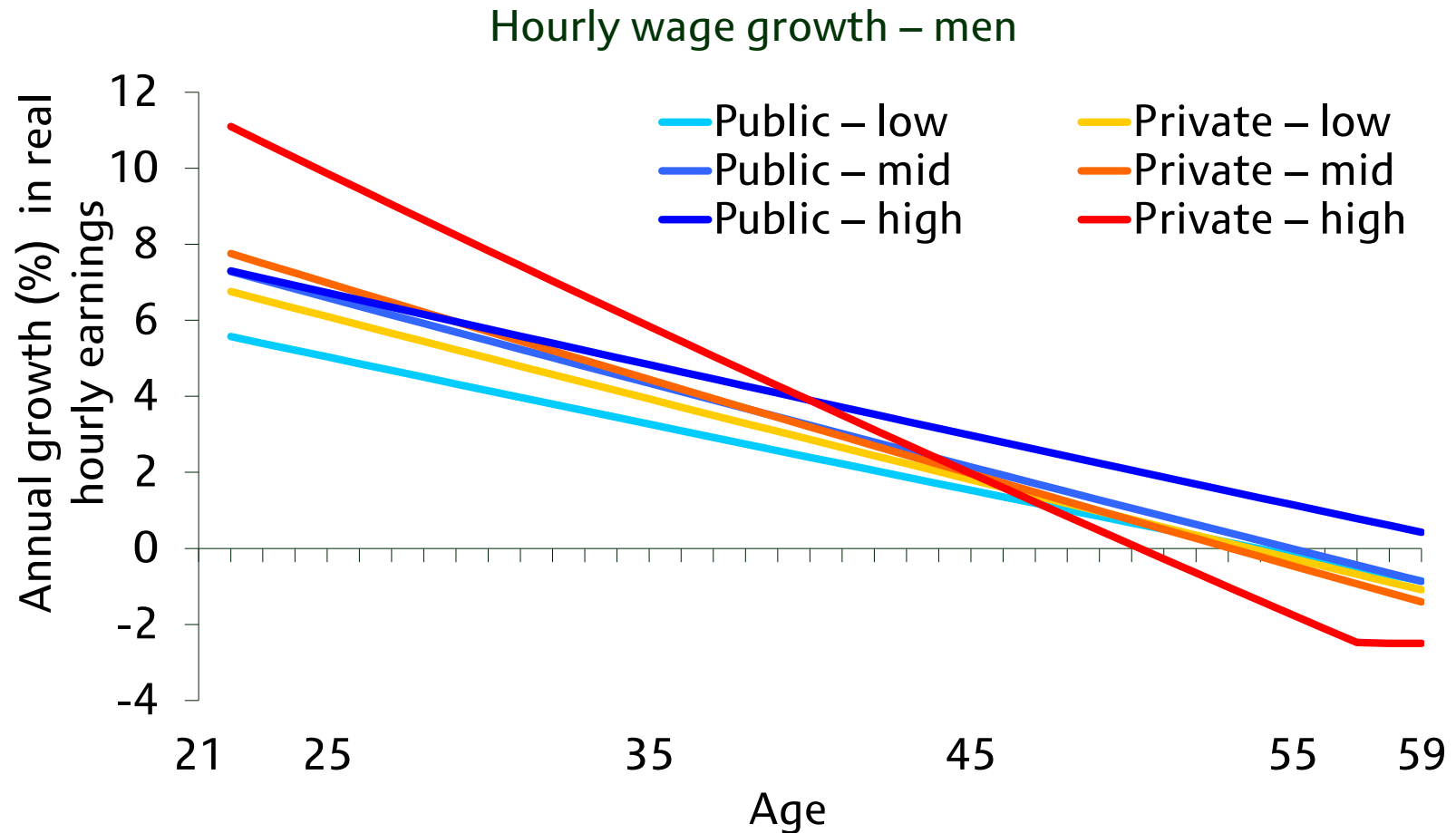
# Methodology: Assumptions

- 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,  $\alpha = 1/60^{\text{th}}$
  - Public Final Salary (pre-reform): NPA= 60,  $\alpha = 1/80^{\text{th}} + 3/80^{\text{th}}$  lump sum
  - Public Career Average: NPA= SPA,  $\alpha = 1/54^{\text{th}}$ , 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)



# Assumed real growth in earnings (men)





# Methodology: Assumptions

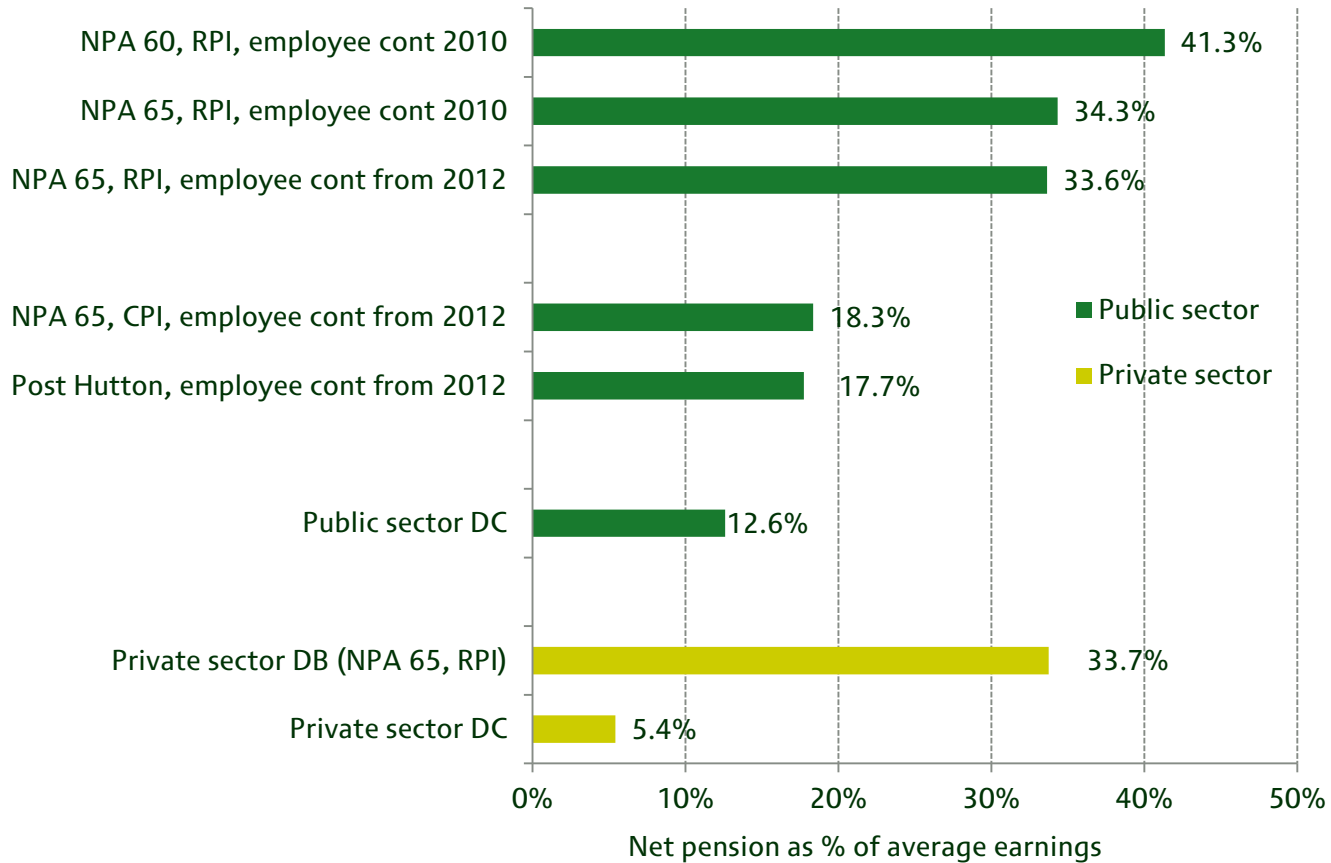
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  - Pay growth: estimate average hourly wage growth (by sex/ sector/ education) observed at different ages from 1994 to 2006 in the LFS
- For **DC schemes**:
  - Use mean sex-specific age-65 RPI-linked annuity rates in each year

# 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

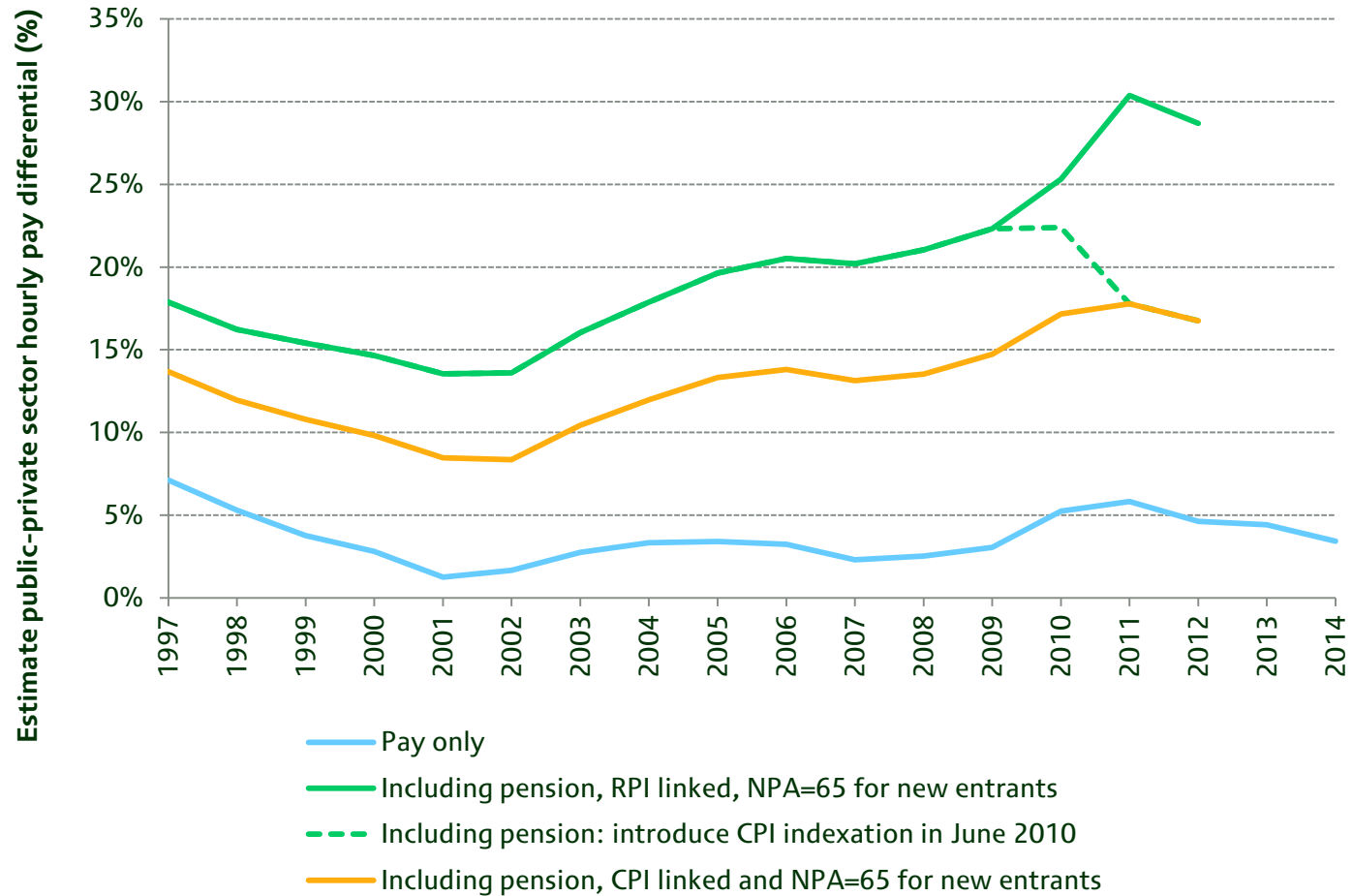
Mean one-period net pension accrual in 2012 under different example scheme rules



# Estimating the public sector pay differential

- Using LFS data we run regressions of **log(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(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