Teacher Pension Workshop: Connecting Evidence-Based Research to Pension Reform

Costs and Cross-Subsidies: Reconciling Two Strands of Teacher Pension Analysis

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COSTS AND CROSS-SUBSIDIES: RECONCILING TWO STRANDS OF TEACHER PENSION ANALYSIS

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TWO STRANDS OF TEACHER PENSIONS ANALYSIS

- Cost and generosity
  - How to accurately value public pension liabilities, given that employers must increase contributions in future years if current contributions fail to earn assumed rate of return
  - What does accurate liability valuation imply for judgements of public sector compensation?
- Cross-subsidies by career length
  - Does "backloading" of DB pension benefit formulas imply that short- and medium-career teachers fail to "break even" on their contributions?
  - Backloading makes teaching less attractive to new hires, can leave short-career teachers with inadequate retirement savings
- But these strands of research exist mostly in isolation from each other
  - Rely on different methodologies and it's not clear if their conclusions are consistent

THE MARKET VALUATION CRITIQUE OF PUBLIC PENSION ACCOUNTING

- Public pensions calculate funding health and required contributions by comparing assets to liabilities
    - Under GASB rules, plans discount future liabilities at interest rate they assume for the plan's investments, today around 7.6%
    - Using this approach, average state/local plan about 72% funded; unfunded liabilities of around $1 trillion
- Most economists believe GASB approach understates plan liabilities
    - Pension benefits are virtually guaranteed; incorrect to discount them using interest rate on risky assets (Novy-Marx & Rauh, 2009)
    - Pension sponsor has obligation to make future contributions if investment returns less than assumed. This contingent liability is costly. (Biggs, 2011)
        - E.g., large payments currently devoted to amortizing unfunded liabilities are the expression of this contingent liability
    - If pension benefits discounted at Treasury yield to reflect guarantee, average public plan around 48% funded and unfunded liabilities equal $3.8 trillion
- Using market valuation approach, public pensions much more generous than previously thought
    - Richwine & Biggs, 2011: On GASB basis with 7.9% discount rate, average teacher plan has "normal cost" of accruing benefits of 12.4% of payroll; employees paid 5.1%
    - But using 4% discount rate, total normal cost rises to 36.5%; net of employee share, employer's implicit cost is 30.8% of wages
    - That's more than 10 times more generous than median employer contribution to private sector 401(k) plans (BLS, 2014)

BACKLOADING & BREAK-EVEN ANALYSIS

- Traditional final salary defined benefit plans are backloaded
  - Benefits accrue much faster in the latter half of employee's career (Costrell and Porgursky, 2010)
  - For full-career employee, about 80% of total benefits accrued after age 50
- Even if DB pensions are adequate on average, less than full-career teachers may lose out
  - Aldeman and Johnson, 2015; Leuken, 2017 calculate "break-even ages" at which teacher benefits exceed accumulated contributions
  - Even up to 20 or more years of service, many teachers fail to break even on their contributions
  - Half to three-quarters of new teachers won't break even under these analyses
- Backloading makes teaching less attractive to new hires, can leave short-career teachers with inadequate retirement savings
  - Doesn't make HR sense if teacher productivity plateaus in early career
 - Solutions can include cash balance plans or defined contribution, 401(k)-type plans

ARE THE STRANDS COMPATIBLE?

- Both strands are critical of teacher pension design, but criticisms are founded in different methodology
  - MVL critique values pension benefits using a low, risk-adjusted discount rate, e.g. a 3% Treasury yield
  - Break-even analyses value pension benefits using the plan's assumed return on risky investments, e.g., 7.6%
- Break even analysis effectively assumes that teachers could receive high returns without risk
  - E.g., compounding teacher contributions at 7.6% assumed return, instead of the return teachers would receive if they wished to receive guaranteed benefits
- Will the break-even analysis hold up if pension benefits are valued using a risk-appropriate discount rate?
  - Break even ages are likely to move forward in teachers' careers, since contributions would be compounded at a lower return

MODELING TEACHER BENEFITS

- Build simple model of teacher benefits under CalSTRS
  - Starting salary of $47,500, followed by age-specific merit raises and general rate of wage inflation
  - Assume employment begins age 25; employee contribution of 8.0% of wages
  - Vesting at five years of service; pre-vesting refund of contributions plus 2.5% interest
  - Benefits claimed at age 62; formula equals 2% of high-3 years of salary, times years of service
  - Retiree lives to age 90 and receives 2% annual COLAs
  - Model generates benefit-to-salary ratios comparable to those calculated by Urban Institute
- At each age, calculate accrued benefits and contributions
  - Future benefits discounted to measurement age at CalSTRS's 7.5% assumed return
  - Employee contributions compounded forward to measurement age at 7.5%
- Using 7.5% return, shows most teachers fail to break even
  - 25-year old teacher must work to age 49 before accrued benefits exceed contributions
 - Based on CalSTRS separation rates, only 46% of new hires would work long enough to recoup their contributions

Ratio of the Present Value of Employee Contributions and Accrued Pension Benefits to Salary at the Time of Calculation
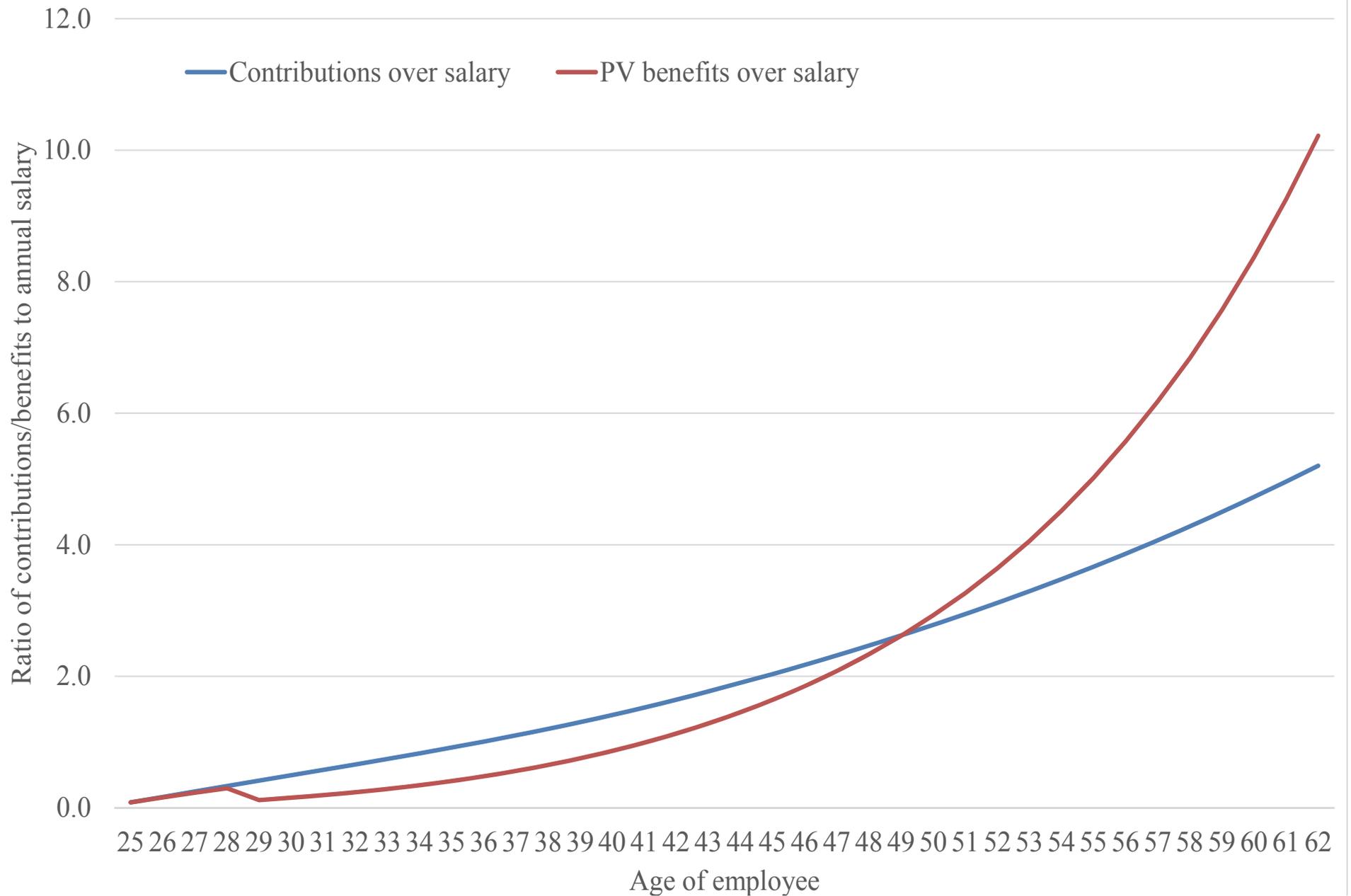
BREAK-EVEN AGES USING RISK-APPROPRIATE DISCOUNT RATE

- Only change is to discount rate, from 7.5% to 3.0%
  - Average current yield on Treasuries with durations of 20 and 30 years, to reflect duration of newly-accrued benefits
- Benefit to salary ratios at age 62 increase significantly
  - This is due to a lower discount rate being applied to benefits that occur later in retirement
- Nevertheless, nearly all teachers of all career lengths at least break even
  - Teachers who leave prior to vesting have small losses, as 2.5% refund interest rate is below 3.0% discount rate
  - Post-vesting, *all* teachers receive benefits exceeding their contributions
    - Just by age 35, accrued benefits equal to 3.1 times accumulated contributions

Ratio of the Present Value of Employee Contributions and Accrued Pension Benefits to Salary at the Time of Calculation
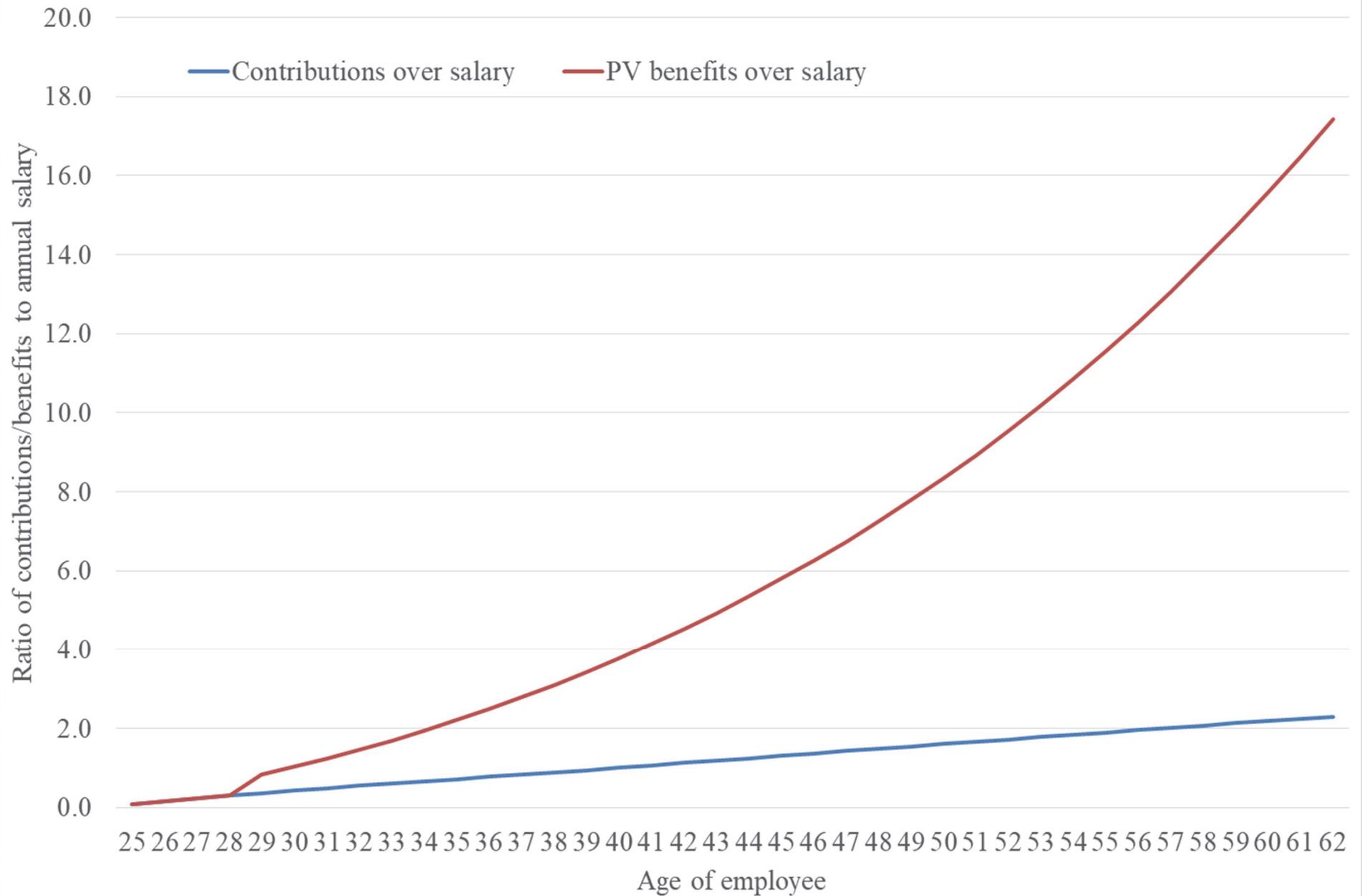
WHAT EXPLAINS THE RESULTS?

- Employer contributions (8.7% of pay for CalSTRS)
  - One wouldn't generally expect employee contributions alone to exceed benefits funded by both employer and employee
  - But even including all contributions at 16.7% of pay, all post-vesting teachers break even
- Implicit return on plan contributions equal to discount rate
  - Normal cost contributions equal to average future benefit discounted at 7.5%
  - Means that total contributions plus guaranteed 7.5% return produces average future benefit
  - If riskless return is 3.0% and average return is 7.5%, average participant comes out *far* ahead
- For teachers of different career lengths, calculate IRR that equates career contributions with lifetime retirement benefits
  - 10 years: 6.1%
    - Would be 4.1% even if employer contribution is included
  - 20 years: 7.2%
  - 25 years: 8.0%
  - 37 years: 10.4%

BACKLOADING USING RISK-APPROPRIATE DISCOUNT RATES

▶ DB pensions will still be backloaded, even if lower discount rate is used

  ▶ But degree of backloading may be reduced

▶ Testing results

  ▶ 7.5% discount rate: Benefit/salary ratio at age 62 is 6.8 times higher than benefit/salary ratio at age 44

  ▶ 3.0% discount rate: Benefit/salary ratio at age 62 is 3.2 times higher than benefit/salary ratio at age 44

    ▶ Ratio of contributions to salary at age 62 is 1.9 times contribution-to-salary ratio at age 44

  ▶ Backloading still exists at lower discount rates, but it is milder

KEY POINTS

- Value benefits as employees value them
  - How employer finances benefits has literally nothing to do with value of benefits to employee, either financially or legally
  - If benefit is guaranteed, value it as a guaranteed benefit
- Cost/generosity of pensions a bigger problem than cross-subsidization
  - At 3.0% discount rate, total normal cost of CalSTRS is 48% of payroll; 40% net of employee contribution
  - Far higher than state can afford, employees would want or taxpayers willing to pay for
- Cross-subsidies may still be an issue worth fixing
  - But less clear (to the author) how large the gains are for attraction/retention of teachers
- Points toward DC over CB plans as better reform option
  - DC plan: employer contribution is fixed; no unfunded liability possible
  - CB plan: employer contribution can still be calculated using high expected return on assets, even if guaranteed return to participants is lower
    - E.g., Nebraska CB plan credits participants with 5% interest, but still calculates employer contributions assuming 7.75% investment return
- But the political argument is harder
  - DC plans more attractive if many teachers believe they will be more generous
  - But at common public employer DC contribution rates of 3-4% of salary, unlikely to be true