Retirement Timing among Public Sector Workers: Responsiveness to Pension Benefit Plan Design Features

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Acknowledgments

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Defined Benefit (DB) Pension Rules and Retirement

- Many factors influence desired retirement ages.
- Financial incentives for retirement are a potential obstacle to working longer.
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- Many factors influence desired retirement ages.
- Financial incentives for retirement are a potential obstacle to **working longer**.
- DB plan parameters yield spikes in lifetime pension wealth based on age and years of service combinations (e.g., Costrell & Podgursky 2009).
- We predict workers time retirement at pension eligibility.

=> **Public sector workers retire at young ages.**
Defined Benefit (DB) Pension Rules and Retirement

Research Questions:

1. Do workers retire as soon as eligible for any benefits or once eligible for full benefits?

2. Is there evidence of ‘excess’ retirements at key Social Security eligibility ages?

3. What characteristics of workers are associated with higher responsiveness to financial incentives?
Prior Literature: Retirement Timing and Financial Incentives

1. Workers covered by DB plans retire at key eligibility ages (e.g., Asch, et al. 2005, Chalmers & Reuter 2012)
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2. Forward-looking measures of pension wealth better approximate financial incentives (e.g., Stock & Wise 1990, Coile & Gruber 2007)

3. Workers respond to changes in plan incentives, salience may be more important than the extent of the financial gain (e.g., Brown 2013, Koedel & Xiang, 2017)
Defined Benefit (DB) Pension Rules and Retirement

This study:

- Analyze retirement timing among public sector workers in North Carolina using combined detailed administrative records and survey data.

Findings:

- Consistent with prior literature, we find workers do respond to financial incentives.
- Analysis of heterogenous impacts limited by small sample sizes in preliminary data.
North Carolina Retirement Transitions Study

Preliminary results using data from a larger 6-year project on public sector retirement

- 2014 Active Worker Cohort Surveys 2014, 2016, & 2018, traces transitions from active employment to retirement:
  - Planning for retirement
  - Retirement timing
  - Health and caregiving

- 2009-2014 Benefit Claimant Cohort Surveys 2015 & 2017:
  - Annuity choice at retirement
  - Post-retirement employment
  - Retirement-income security and well-being
Current and Planned Data

- March 2014 data:
  - Administrative records on active workers ages 50-64 in March 2014.
  - Restrict to those hired between ages 22-39, no breaks in service or withdraw service (N=40,825).
  - Survey responses April-May 2014 from 694 of these (over 2,000 respondents total 18% response rate)
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- Planned activities:
  - November/December 2017: Administrative data release
  - March 2018: Resurvey of actives and recent retirees
1. Do workers respond to financial incentives for retirement?
   • Present value (PV) calculations require knowledge about survival, market interest rates, and personal discount rates.
   • Theory predicts retirement when PV of retirement exceeds PV of continued work.
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   - Present value (PV) calculations require knowledge about survival, market interest rates, and personal discount rates.
   - Theory predicts retirement when PV of retirement exceeds PV of continued work.
   - For many, our calculation of peak pension wealth coincides with full retirement eligibility.
   - Rule-of-thumb decision-making will appear similar to responsiveness to financial incentives.
Financial Incentives for Retirement in NC

- All workers are covered by Social Security.
- Typical DB structure:
  \[ B_{MAX} = Early \times M \times YOS \times FAS \]
  Multiplier M is 0.0185 for LGERS and 0.0182 for TSERS
- Full eligibility:
  - 30 YOS, any age
  - Age 60, 25 YOS
  - Age 65, 5 YOS
- Early retirement formula is not linear and not necessarily actuarially fair:
  - Age 60-64 and <25 years: 3% reduction per year of age
  - Age 50-59 and 20-29 years: mostly 5% per year of service
### Financial Incentives for Retirement in NC

<table>
<thead>
<tr>
<th>Age</th>
<th>29</th>
<th>28</th>
<th>27</th>
<th>26</th>
<th>25</th>
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<th>23</th>
<th>22</th>
<th>21</th>
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<td>65%</td>
<td>60%</td>
<td>55%</td>
<td>50%</td>
</tr>
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Retirement Hazards

- **Age-at-hire 22-29**: Normal 30 YOS, any age
- **Age-at-hire 30-39**: Normal 25-30 YOS, age 60-65
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Present Value of Retirement Benefits at Age 50

Hypothetical workers present value calculations:

- Hired at age 24:
  - Peak value is **Age 54, 30 YOS:** $316K
- Hired at age 34:
  - Peak value is **Age 60, 26 YOS:** $151K
  - Value of age 64, 30 YOS: $129,778

- Exercise does not incorporate outside earnings.
- Modeling assumptions:
  - Personal discount rate: 7.25%
  - Life expectancy: gender-specific mortality tables from experience studies
  - Earnings growth for those still working: 2%
  - Starting salary $35,000
Summary of Empirical Analysis

1. Graphical evidence that incentives matter
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2. Simulations of “peak value” pension wealth
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1. Graphical evidence that incentives matter
2. Simulations of “peak value” pension wealth
3. Hazard model for those eligible for retirement

Using the full administrative records, person-year obs.:

- Results are similar using percent benefit reduction, peak value difference, and normal retirement eligibility.
- Age-at-hire 22-29 are more likely to wait for normal retirement eligibility than age-at-hire 30-39.
<table>
<thead>
<tr>
<th>Age At-Hire</th>
<th>Eligible Normal</th>
<th>&lt;Displaying Key Ages Only&gt;</th>
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<tr>
<td>22-29</td>
<td>0.169***</td>
<td>0.100***</td>
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<tr>
<td></td>
<td>(0.008)</td>
<td>(0.006)</td>
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<tr>
<td>30-39</td>
<td>0.004</td>
<td>0.037***</td>
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<td></td>
<td>(0.011)</td>
<td>(0.009)</td>
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<tr>
<td>59</td>
<td>0.014</td>
<td>0.086***</td>
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<tr>
<td></td>
<td>(0.013)</td>
<td>(0.009)</td>
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<tr>
<td>60</td>
<td>-0.013</td>
<td>0.070***</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>61</td>
<td>0.075***</td>
<td>0.129***</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>62</td>
<td>0.155</td>
<td>0.106</td>
</tr>
</tbody>
</table>

Person-year observations, only those eligible to retire. Dependent variable is retired (mean 0.155 and 0.106, respectively). Estimated marginal effects from a probit model. Specifications include ages 51-66 indicators, a quadratic in tenure, female, LGERS, a quadratic in salary, and a wave 2 indicator.
Heterogeneity: Hazard Models of Retirement Timing

- Age-at-hire 22-29 are more likely to wait for normal retirement eligibility than age-at-hire 30-39.
- Evidence of heterogeneity in age-at-hire 22-29 group:
  - Some LGERS members not covered by RHI, estimated excess retirements at age 65
  - Lower salary workers are more likely to retire past age 62.
- No similar patterns for age-at-hire 30-39 group.
**Heterogeneity: Survey Data**

- NCRTS survey March 2014:
  - Age 22-39 at hire, retire by 2016

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<th>Percent Normal</th>
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<td>1,175</td>
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<td>135 (11.5%)</td>
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<tr>
<td>Married</td>
<td>839</td>
<td>6.8%</td>
<td>11.7%</td>
</tr>
<tr>
<td>College degree</td>
<td>743</td>
<td>6.1%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Plan to work after</td>
<td>848</td>
<td>6.6%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Financial literacy (2 of 3)</td>
<td>524</td>
<td>7.1%</td>
<td>11.8%</td>
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<tr>
<td>Own health is good</td>
<td>723</td>
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- Differences by skill?
- Differences by health status?
## Hazard Models of Retirement Timing

<table>
<thead>
<tr>
<th>Term</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible for normal benefits</td>
<td>0.121**</td>
<td>0.051</td>
<td>0.126**</td>
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<tr>
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<td>(0.023)</td>
<td>(0.044)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Normal x College Degree</td>
<td>0.065*</td>
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<tr>
<td></td>
<td>(0.038)</td>
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<tr>
<td>Normal x Non-white</td>
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<td>Normal x Married</td>
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<tr>
<td>Normal x Health Poor/Fair</td>
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<td>0.054</td>
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<td>(0.049)</td>
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<td>Normal x Spouse Health Poor/Fair</td>
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<td>(0.024)</td>
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N = 1,291, age-at-hire 22-39, mean dep. var. 0.129. Marginal effects from a probit. Specifications include college degree, non-white, married, quadratic in age, years of service, and salary, female, LGERS, and wave.
Next Steps

Future work will incorporate:

- Outside earnings potential
- Desired work after retirement
- Job characteristics
- Spousal retirement status
- Supplemental retirement savings
- Social Security Claiming information
- Retiree health insurance
- **Additional data for increased power**
Next Steps

This project seeks to understand:

- How do public workers manage young retirement ages?
- Do public workers find outside work in retirement?
- Can public workers sustain their standard-of-living throughout long retirements?
- What characteristics of public workers determine their retirement timing?
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Preliminary work suggests only 30% of these workers ultimately work in retirement...
Conclusions

Main Findings:

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*Financial incentives for retirement may inhibit workers’ desire to work longer at their public employer*