School District Pension Reform as a Cut in State School Aid

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In Illinois, employer costs of public pensions for teachers are state responsibility except in Chicago.

- Retirement benefits are a large share of teacher compensation.
- Pension benefits are implicit state aid.

In April 2010, Illinois created a Tier II pension system that greatly reduced potential pensions after January 1, 2011.

- Expected present value of Tier II benefits could be $600,000 less than an identical teacher enrolled in Tier I.
- The annual reduction in implicit state aid was $2.4 million in the median K-12 school district (52% of the $4.6 million in annual General State Aid to the average K-12 district).
On April 14, 2010, Senate Bill 1946 established a two-tiered pension system.

- **Tier II** is the pension system for public employees who first contributed on or after January 1, 2011.
- Employees who contributed prior to January 1, 2011 remain participants of **Tier I**.
### Major Retirement Benefit Provisions (I)

<table>
<thead>
<tr>
<th>Retirement Eligibility and Age Requirements</th>
<th>Tier I Members (Hired before January 1, 2011)</th>
<th>Tier II Members (Hired on or after January 1, 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Age 55</strong> with 35 years of service (full benefits with no reduction)</td>
<td>• <strong>Age 67</strong> with 10 years of service (full benefits with no reduction)</td>
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</tr>
<tr>
<td>• Age 60 with 10 years of service (full benefits with no reduction)</td>
<td>• Age 62 with 10 years of service (reduced 6% for every year that the member’s age at retirement is under age 67)</td>
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<tr>
<td>• Age 62 with 5 years of service (full benefits with no reduction)</td>
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<tr>
<td>• Age 55 with 20 years of service (reduced 6% for every year that the member’s age at retirement is under age 60)</td>
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</tbody>
</table>

- **Tier I Members**: Hired before January 1, 2011
- **Tier II Members**: Hired on or after January 1, 2011
# Major Retirement Benefit Provisions (II)

| Retirement Formulas | Tier I Members  
(Hired before January 1, 2011) | Tier II Members  
(Hired on or after January 1, 2011) |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Formula</strong></td>
<td>Most members are based on a formula: “2.2% × years of creditable service × final average salary”.</td>
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</tr>
<tr>
<td></td>
<td>The final average salary: the member’s highest average salary earned during <strong>four</strong> consecutive years out of the last 10 years of service.</td>
<td>The final average salary: the member’s highest average salary earned during <strong>eight</strong> consecutive years out of the last 10 years of service.</td>
</tr>
<tr>
<td></td>
<td>Annuities are capped in one way: The maximum retirement benefit a member can receive is 75% of final average salary.</td>
<td>Annuities are capped in two way:</td>
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<tr>
<td></td>
<td>• The increase is <strong>3%, compounded annually</strong>.</td>
<td>(1) The maximum retirement benefit a member can receive is 75% of final average salary.</td>
</tr>
<tr>
<td></td>
<td>• The increase is calculated using the lesser of <strong>3% or 1/2 of the change in Consumer Price Index, not compounded</strong>.</td>
<td>(2) In determining a final average salary, no member’s salary will exceed a limit that is tied to the Consumer Price Index. The limit in FY 2016 was $111,571.63.</td>
</tr>
</tbody>
</table>
What We Do

1. Simulate the reduction in pension benefits earned by essentially identical teachers hired right before and after the policy change.
2. Investigate if there was a surge in hiring between April 14 and December 31, 2010.
   - Compare to the total number of state-level newly hired teachers in other fiscal years.
   - Calculate the number and the hiring rate of newly hired teachers separately at different percentile levels in each fiscal years.
   - Explore heterogeneity across different organizational types of districts.
3. Examine if fiscal constraints prevent school districts from responding to the “free lunch” between April 14 and December 31, 2010.
Simulation Methodology

- Compare the value of pension benefits between two identical teachers:
  1. Ms. Early
     - Joined the Tier I TRS plan at 11:59pm on December 31, 2010.
  2. Ms. Late
     - Joined the Tier II TRS plan at 12:01am on January 1, 2011.
Simulation Methodology

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• Suppose that both of them:
  • Started their careers at exactly age 25 at the (average) salary of $40,000 per year.
  • Received annual raises of 2% per year each year until they retire.
  • Retired at exactly age 62 (two minutes apart in 2048).
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  - Retired at exactly age 62 (two minutes apart in 2048).
    - What if Ms. Late retired at age 67 (no penalty suffered)?
Pension Benefits Received Each Year After Retirement

Nominal Pension Benefit for Ms. Early and Ms. Late

- Ms. Early if retiring at age 62
- Ms. Late if retiring at age 62
- Ms. Late if retiring at age 67
Illinois State Board of Education (ISBE)

- Teacher Service Record (TSR)
  - Publicly available administrative dataset from FY2002 to FY2012.
  - Reports experience (for district, Illinois, and out of Illinois), salary, employment status, and demographics of teachers.
  - Restrict sample to all Illinois public elementary districts, high school districts and unit districts.
  - 1,138,899 observations; 863 public school districts per year on average.
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- School District Financial Profile
  - Reports a weighted average score of five financial components (such as fund balance to revenue ratio, expenditure to revenue ratio, cash on hand) since FY2002.
  - According to this score, four financial strength categories are designated to districts.
Total Number of Newly Hired Teachers

![Bar chart showing the number of newly hired teachers by fiscal year. The peak is in 2006, followed by a sharp decline in 2011 and a rise in 2012.](image-url)
Hiring Rate, By Percentiles

50th Percentile

80th Percentile

90th Percentile

95th Percentile
Hypotheses for Differential Reactions

- School districts with weak finances might have been unable to respond to Tier II.
- Districts with a strong financial profile might have responded more aggressively.
Contemporaneous Financial Score, Unconditional Scatterplots (I)
Contemporaneous Financial Score, Unconditional Scatterplots (II)
Average Financial Score, Unconditional Scatterplots

- **Fiscal Year 2008**: Slope = -0.2183 (0.5523)
- **Fiscal Year 2009**: Slope = -0.3878 (0.5052)
- **Fiscal Year 2010**: Slope = -0.0996 (0.4327)
- **Fiscal Year 2011**: Slope = -0.2741 (0.4241)
- **Fiscal Year 2012**: Slope = -0.8073 (0.5188)
Starting Salary, Unconditional Scatterplots

Fiscal Year 2008

Fiscal Year 2009

Fiscal Year 2010

Fiscal Year 2011

Fiscal Year 2012

Slope = -0.00013 (0.00003)

Slope = -0.00011 (0.00002)

Slope = -0.00013 (0.00002)

Slope = -0.00015 (0.00002)

Slope = -0.00021 (0.00002)
Starting Salary, Conditional Scatterplots

Residualizing starting salary by individual’s highest college degree earned and total number of teachers employed in the district.
Future Work (I)

- What other margins might have been affected by the introduction of Tier II?
  - Teachers with greater financial literacy and/or better outside career options may have shifted away from entering teaching.
  - Might be detected by exploring compositional changes in the mix of colleges and universities providing new teachers to Illinois.
Future Work (II)

- What longer term impacts will Tier II have on teacher labor markets?
  - Will workers in Tier II recognize how much their pension benefits will be diminished relative to senior colleagues?
  - Will this affect their labor market behavior?
  - We plan to compare early career labor market behavior of Tier I and Tier II teachers.
Future Work (III)

- If pension reform increases attrition rates, particularly for late career teachers, would this benefit the state, individual districts or students?
  - Salaries for late career teachers are sometimes equivalent to two early career teachers.
  - Studies suggest that returns to teacher experience level off or even decline as experience increases (Rice, 2010).
  - A policy that increases attrition of mid to late career teachers may improve districts’ fiscal condition without a negative impact on student achievement.
Future Work (IV)

- What are the cross-district equity implications of Tier II?
  - It is likely that pension benefits disproportionately benefit relatively high wealth school districts.
  - Does the introduction of Tier II make the school funding system more progressive?
  - Are teachers from all types of districts more likely to leave the profession after a short tenure?
  - Are teachers in low wage districts more likely to seek to move to high wage districts?
Thank you!

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