An empirical analysis of teacher salaries and labor market outcomes in Oklahoma

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Research Questions

1. How do teacher salaries in OK compare to salaries in the private sector and to teacher salaries in TX?
2. What do teacher labor market outcomes look like in OK?
   - How do teacher turnover rates and hiring compare to TX and how do they vary by school type (urban v. rural, low-income v. high-income)?
3. Policy implications
Key Findings

1 SALARIES:

- Teacher salaries in OK are low compared to TX and the private sector, particularly among mid-career teachers and for teachers in urban areas.
- Teacher salaries in TX are about 16% higher overall. About 34% higher if you compare OKC/TUL to DAL/HOU.
- Salaries in OK private sector are 28% higher than teacher salaries. Gap is particularly large for mid-career teachers. Starting teacher salaries actually exceed private sector salaries.
- Urban vs. all teacher pay gaps: 17% in TX, 2% in OK
2 Teacher labor market outcomes:

- Teacher turnover is higher in OK than in TX (8% vs. 11% exit public schools annually)
- Attrition in low-income, urban schools is particularly high
- Low-income, urban schools have difficult time hiring experienced teachers
- Students in OK low-income, urban schools taught by the least experienced, least attached teachers
3 Policy:

- Achieving turnover parity with TX (12% salary increase)
- Differentiated salaries within districts (low-income vs. high-income schools 50% differential to equalize turnover) (by subject or grade?)
- Improve efficiency by reshaping salary schedule (concave vs. convex)
### Institutional background

- Who sets salaries and how? (district salary schedules, state minimum schedule)
- Teachers and principals determine turnover and hiring.

**STILLWATER PUBLIC SCHOOLS**

#### Certified Salary Scale 2014-2015

<table>
<thead>
<tr>
<th>Level</th>
<th>Bachelor Degree</th>
<th>Bachelor Degree + 16 Hours</th>
<th>Masters Degree</th>
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<tbody>
<tr>
<td><strong>Level I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 0</td>
<td>$32,522</td>
<td>$32,769</td>
<td>$33,660</td>
</tr>
<tr>
<td>Step 1</td>
<td>$32,886</td>
<td>$33,160</td>
<td>$34,049</td>
</tr>
<tr>
<td>Step 2</td>
<td>$34,036</td>
<td>$34,233</td>
<td>$35,603</td>
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<tr>
<td>Step 3</td>
<td>$34,400</td>
<td>$34,961</td>
<td>$36,260</td>
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<tr>
<td>Step 4</td>
<td>$34,746</td>
<td>$35,325</td>
<td>$36,625</td>
</tr>
<tr>
<td>Step 5</td>
<td>$35,716</td>
<td>$36,183</td>
<td>$37,587</td>
</tr>
<tr>
<td>Step 6</td>
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<td>$36,868</td>
<td>$38,452</td>
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<tr>
<td>Step 7</td>
<td>$36,305</td>
<td>$37,246</td>
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</tr>
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</table>

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Teacher Salaries and Market Outcomes

December 2015
Data

- Administrative files from OK State Dept of Education and Texas Education Agency (2006-15)
  - teacher characteristics - experience, degree, FTE
  - teacher assignments - school, district, grade, subject
  - teacher salaries - base salary (determined by district salary schedule)
- American Community Survey (2006-2014) from the US Census Bureau
  - representative sample of worker characteristics and employment outcomes
  - Use to estimate alternative salaries for public school teachers in OK’s private sector
  - median salary for full-time workers holding a BA/BS by potential experience (age-23) employed in OK’s private for profit firms (excludes self-employed)
Teacher salary analysis

Salary by year of experience

- **OK private sector**
- **OK teacher**
- **TX teacher**
- **OK state min salary**

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Teacher attrition rates in OK

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teacher salaries and market outcomes

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Teacher attrition rates: OK vs TX

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### Teacher attrition rates

<table>
<thead>
<tr>
<th>by locale</th>
<th>left Pub Schls</th>
<th>left district</th>
<th>left school</th>
</tr>
</thead>
<tbody>
<tr>
<td>All OK</td>
<td>11.1%</td>
<td>15.7%</td>
<td>21.0%</td>
</tr>
<tr>
<td>All TX</td>
<td>8.4%</td>
<td>13.8%</td>
<td>20.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>by free lunch elig.</th>
<th>left Pub Schls</th>
<th>left district</th>
<th>left school</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤32%</td>
<td>12.0%</td>
<td>15.5%</td>
<td>20.3%</td>
</tr>
<tr>
<td>32-48%</td>
<td>10.5%</td>
<td>14.8%</td>
<td>19.1%</td>
</tr>
<tr>
<td>48-65%</td>
<td>9.8%</td>
<td>14.6%</td>
<td>19.6%</td>
</tr>
<tr>
<td>&gt;65%</td>
<td>12.0%</td>
<td>17.0%</td>
<td>24.7%</td>
</tr>
</tbody>
</table>
## OK teacher credentials

<table>
<thead>
<tr>
<th>Locale</th>
<th>experALL</th>
<th>experTURN</th>
<th>experHIRE</th>
<th>%BA</th>
<th>%MA</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>12.4</td>
<td>11.2</td>
<td>7.0</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>City</td>
<td>11.7</td>
<td>10.1</td>
<td>6.4</td>
<td>73%</td>
<td>27%</td>
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<tr>
<td>Rural</td>
<td>12.9</td>
<td>11.9</td>
<td>7.3</td>
<td>76%</td>
<td>24%</td>
</tr>
<tr>
<td>Suburb</td>
<td>12.2</td>
<td>10.7</td>
<td>7.2</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>Town</td>
<td>12.9</td>
<td>12.2</td>
<td>7.2</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>≤32%</td>
<td>12.6</td>
<td>11.3</td>
<td>7.4</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td>32-48%</td>
<td>13.0</td>
<td>11.9</td>
<td>7.1</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td>48-65%</td>
<td>12.6</td>
<td>11.7</td>
<td>7.2</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>&gt;65%</td>
<td>11.6</td>
<td>10.3</td>
<td>6.5</td>
<td>75%</td>
<td>25%</td>
</tr>
</tbody>
</table>
How can changes in teacher salaries improve student outcomes?

- Good teachers (high value-added) have large effects on student test scores and long-term outcomes (Chetty, Rockoff, Friedman 2014)

How can higher salaries improve teacher productivity?

- Effort? Some evidence in other professions.
- Improved retention of high-ability teachers (Hendricks working paper)
- Direct effects of improved retention: strengthened bonds between students and teachers (Ronfeldt, Loeb & Wyckoff (2013))
- Improved retention increases overall teacher experience (Hendricks 2014) (Experience matters - a lot of research)
Implications for policy

- Teacher attrition is high in OK relative to Texas. How can we equalize this? (shift salary schedules up by about 12%)

- Teacher attrition is high and experience levels are low in low-income schools. How can we address this? Differentiated salaries (pay a compensating differential on the order of 50%).

- Is there a way to improve teacher productivity for free? Yes. Reshape the salary schedule.
Reshaping the salary schedule

- Current
- Optimal
- Optimal 5% increase
- Optimal 10% increase
- Optimal 15% increase
Average teacher value-added
Conclusion

Takeaways

- OK teacher salaries are low relative to TX and the OK private sector
- Teacher attrition in OK is high relative to TX
- Attrition is particularly high in low-income urban schools
- Ways to improve student outcomes in OK:
  - increase teacher salaries
  - offer differentiated salaries by school characteristics or position characteristics.
  - reshape the salary schedule

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