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Comparing Academic and Non-Academic Salaries: Establishing Homogeneous Groups by Discipline, Educational Credentials, and Job Category

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Comparing Academic and Non-Academic Salaries: Establishing Homogeneous Groups by Discipline, Educational Credentials, and Job Category

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Ohio University
Overarching questions and assumptions

• How does the academic profession “stack up” against other professions in terms of its attractiveness to the best and brightest of the next generation?

• While only one element in the relative attractiveness of academe as a career option, compensation is certainly an important one – and one that is, relatively speaking, identifiable and quantifiable.
In the past, there has been very limited study of comparative compensation

- Schuster and Finkelstein (2006) cited two sources to compare average aggregated annual salaries of full-time faculty to lawyers, medical professionals, computer and information scientists, engineering professionals, life and physical scientists
  - the AAUP’s 2000-01 Annual Report on the Economic Status of the Profession

- They found that faculty salaries averaged 25.5% less overall than the weighted index of these occupations, ranging from 10% less than life and physical scientists to 51% less than medical professionals

- A dismal picture for the most talented prospective recruits
Limitations of past comparisons

• **Academic side:** All academic fields aggregated in ways that ignore substantial differences among disciplines and professional fields (and overly weighted by low-paid humanities and social sciences)

• **Non-academic side:** Use of gross averages does not allow breakdowns within broad occupations by:
  - educational credentials (i.e. advanced degree)
  - specific subfield within the broader occupational category, Meaning what? Difference between nuclear/petroleum engineering and civil engineering?
  - rank or seniority
  - institutional setting, i.e. public vs. private?

• All traditional determinants of compensation from a human resource perspective;

• So we cannot quite compare apples to apples (don’t quite have common metrics)
Another step towards a set of common metrics

• BLS’ Occupational Employment Statistics Survey allows us to distinguish between:
  • Postsecondary teachers in different academic fields
    • Two broad institutional settings – public vs. private sector
    • Subfields and/or job types within each broad occupational category or profession (in the case of academics, their discipline)
    • Industry of occupation through the use of the NAICS
  Can we explain? It’s a little vague
    • Group organizations and institutions based upon primary output, e.g.
    • Provide for standardized job types across all industries e.g.
    • Can differentiate between specialized organizations, for example, hi-tech companies and knowledge management firms.
  • Levels of seniority -- 25th vs. mean vs. 75th percentile in the distribution
The following analysis draws comparisons for 2009 and 2011

• Organized first by academic field—comparing lawyers who teach at a university to lawyers who practice; psychologists in private practice to those who teach at a university

• Organized next by institutional setting: private vs. public sector

• Organized, then, by specific industry: e.g.???

• Organized as well by seniority: 25th vs. Mean vs. 75th percentile
Such an analysis allows us to...

• Compare postsecondary teachers to non-academics
  – in the same field
  – at the same level of seniority
  – in the same sector.

• Also, we may be able to better address differences in educational credentials
Dealing with the educational credentials limitation

• Less of a problem in comparing professors to lawyers and physicians
  • Each requires a terminal degree
  • These degrees are non-substitutable
  • Reflect approximately the same number of years of formal education, i.e. 20

• For other fields, job categories that are likely to require advanced graduate education were selected
  • For example: Nuclear Engineer; Clinical Psychologist; Biochemist

• Further, specific industries are used as a filter to create more homogenous subgroups for comparison.
  • For non-academic job categories, specific industries providing knowledge capital or requiring greater educational credentials were selected, i.e. consulting services
  • For academic occupations, industry filters allow for 4 year, comprehensive, research and professional institutions only to be used (excluding community colleges and proprietary institutions)

• Also, Federal pay scales add another level of commonality (homogeneity) because...
  – GS-11 rates represent the ground floor for PhD holders
  – Take into account market factors, such as locality and scarcity

How is this relevant to the comparison with postsecondary teachers?
Some Comparisons
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Occupational Industry (NAICS Number)</th>
<th>Private</th>
<th>% Diff Fac vs Occ</th>
<th>Public</th>
<th>% Diff Fac vs Occ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering occupations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical engineers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Res &amp; Dev: Phy, Eng, Life Sci (541710)</td>
<td>$104,060 $75,960 $125,020</td>
<td>3.9</td>
<td>0.5</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Prof, Sci, Tech Services: Eng Services (541330)</td>
<td>$110,240 $76,360 $129,150</td>
<td>-1.8</td>
<td>0.0</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Chem Manuf: Pharm &amp; Medical (325400)</td>
<td>$92,780 $75,670 $109,020</td>
<td>14.3</td>
<td>0.9</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Nuclear engineers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Res &amp; Dev: Phy, Eng, Life Sci (541710)</td>
<td>$115,460 $92,100 $139,160</td>
<td>-6.6</td>
<td>-20.6</td>
<td>-5.4</td>
<td></td>
</tr>
<tr>
<td>Prof, Sci, Tech Services: Eng Services (541330)</td>
<td>$119,320 $92,680 $139,090</td>
<td>-10.2</td>
<td>-21.4</td>
<td>-5.3</td>
<td></td>
</tr>
<tr>
<td>Engineering teachers, postsecondary</td>
<td>Education: Colleges, Univ and Prof Schools (611300)</td>
<td>$108,300 $76,370 $132,050</td>
<td></td>
<td></td>
<td>$95,740 $67,140 $118,240</td>
</tr>
</tbody>
</table>

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Engineering

• In the private sector, postsecondary teachers
  – are quite comparable to chemical engineers and even surpass those in the chemical manufacturing sector
  – they trail nuclear engineers, but primarily at the entry or early career level

• In the public sector, postsecondary teachers trail especially at the entry or early career level
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Occupational Industry (NAICS Number)</th>
<th>Private</th>
<th>% Diff Fac vs Occ</th>
<th>Public</th>
<th>% Diff Fac vs Occ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean Salary</td>
<td>25%ile</td>
<td>75%ile</td>
<td>Mean Salary</td>
</tr>
<tr>
<td>Life Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemists and biophysicists</td>
<td>Res &amp; Dev: Phy, Eng, Life Sci (541710)</td>
<td>$92,430</td>
<td>$60,230</td>
<td>$115,980</td>
<td>-3.4</td>
</tr>
<tr>
<td></td>
<td>Chem Manuf: Pharm &amp; Medical (325400)</td>
<td>$85,190</td>
<td>$63,590</td>
<td>$100,900</td>
<td>4.7</td>
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<tr>
<td>Microbiologists</td>
<td>Res &amp; Dev: Phy, Eng, Life Sci (541710)</td>
<td>$71,110</td>
<td>$49,250</td>
<td>$89,060</td>
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<tr>
<td></td>
<td>Chem Manuf: Pharm &amp; Medical (325400)</td>
<td>$68,550</td>
<td>$44,700</td>
<td>$88,150</td>
<td>23.3</td>
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<tr>
<td>Biological science teachers, postsecondary*</td>
<td>Education: Colleges, Univ and Prof Schools (611300)</td>
<td>$89,370</td>
<td>$57,000</td>
<td>$106,960</td>
<td></td>
</tr>
</tbody>
</table>
Biological Sciences

• In the private sector, postsecondary teachers
  – trail biochemists and biophysicists at the entry/early career level
  – but substantially surpass microbiologists across the board, irrespective of industry

• In the public sector, postsecondary teachers
  – surpass biochemists across the board
  – but trail microbiologists, especially at the entry/early career level
<table>
<thead>
<tr>
<th>Occupation Industry (NAICS Number)</th>
<th>Private</th>
<th>Public</th>
<th>% Diff Fac vs Occ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Salary 25%ile 75%ile Mean Salary 25%ile 75%ile</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Psychology Occupations</td>
<td></td>
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</tr>
<tr>
<td>Clinical, counseling, and school psychologists</td>
<td>All Industries</td>
<td>$73,300</td>
<td>$45,030</td>
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<tr>
<td>Health Care: Office of Mental Health practitioners (621330)</td>
<td>$83,650</td>
<td>$45,880</td>
<td>$99,530</td>
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<tr>
<td>Psychology teachers, postsecondary*</td>
<td>Education: Colleges, Univ and Prof Schools (611300)</td>
<td>$72,670</td>
<td>$49,190</td>
</tr>
</tbody>
</table>
Psychology

• In the private sector, postsecondary teachers
  – surpass practicing psychologists at the entry/early career level
  – but lose that advantage by mid-career

• In the public sector, postsecondary teachers
  – do slightly better than practicing clinical and school psychologists, except at the entry/early career level
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Occupational Industry (NAICS Number)</th>
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<th>% Diff Fac vs Occ</th>
<th>Public</th>
<th>% Diff Fac vs Occ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Salary</td>
<td>25%ile</td>
<td>75%ile</td>
<td>Mean Salary</td>
<td>25%ile</td>
</tr>
<tr>
<td>Legal Occupations</td>
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<tr>
<td>Lawyers</td>
<td>All Industries</td>
<td>$138,800</td>
<td>$78,240</td>
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<tr>
<td>Prof, Sci and Tech services: Legal Services (541100)</td>
<td>$137,170</td>
<td>$76,000</td>
<td>$182,730</td>
<td>-20.3</td>
<td>-18.6</td>
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<tr>
<td>Judges, magistrate judges, and magistrates</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>$110,940</td>
<td>$58,230</td>
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<td>Law teachers, postsecondary*</td>
<td>Education: Colleges, Univ and Prof Schools (611300)</td>
<td>$114,000</td>
<td>$64,090</td>
<td>$151,330</td>
<td>$105,240</td>
</tr>
</tbody>
</table>
Law

• In both the private and public sectors, postsecondary teachers substantially trail practicing lawyers.

• In the public sector, however, while postsecondary teachers trail judges at the early and mid-career level, they have caught up with and even surpassed judges at the senior level.
Summary

- The relative advantage (or disadvantage) of postsecondary teachers vis-à-vis other professionals in their field in terms of compensation
  - Varies by field (considerable in law, less so in engineering)
  - Within field varies by subfield and industry
  - Varies by sector (a disadvantage in the private sector may be an advantage in the public sector)
  - Varies by career stage (while in a few instances, the advantage or disadvantage spans the careers, in several cases it is primarily an entry level phenomenon)
Next Questions