Do faculty salaries rise with job seniority?

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Abstract

Previous research suggests that academic salaries fall with greater job seniority. Using a 1988 national survey, we find that the return to seniority is positive over a lengthy employment period. Tenure status and academic rank also affect the return to seniority.

Keywords: Faculty; Salary; Seniority

JEL classification: J31; J44

1. Introduction

The availability of national faculty data bases containing detailed information on salaries and productivity measures has helped fuel a growing literature on academic salaries. The importance of the academic labor market increases to the extent researchers can extrapolate results to the markets for other professional workers for whom similar data are not as readily available. Recent findings, however, might cause us to question the similarity between faculty salary determination and the salaries of workers outside academe.

In his article “Seniority and monopsony in the academic labor market” Ransom uses data from three national faculty surveys1 to illustrate what he views as a labor market anomaly: an inverse relationship between seniority and academic salaries (Ransom, 1993).2 Ransom suggests that the explanation lies in the monopsony power that university employers derive from the relatively large

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1Ransom’s data are from: the Carnegie Commission National Survey of Higher Education: Faculty Study 1969; the American Council on Education’s 1973 survey; and the 1977 Survey of the American Professoriate.
2Ransom is not the first researcher to find a negative seniority wage premium among academics. Siow (1994) uncovered a negative wage premium using the 1969 Carnegie Faculty Survey, one of Ransom’s data bases. Using faculty data from two universities, Hoffman (1976) also reported an inverse relationship between seniority and salary. Siow attributes the negative correlation to “implicit peer review.” Academics who move will have higher wages than non-movers, controlling for labor market experience. “Due to moving costs, professors with outside offers who do not move, usually stay for lower counter bids than rejected outside offers.” (p. 23). In “Raids and Offer Matching,” Lazear (1986) predicted a similar scenario.
distances between universities as well as the individualized nature of faculty pay. Hallock (1995) tries to replicate Ransom’s results using 1989 data from the University of Massachusetts at Amherst (UMASS). Unlike Ransom, Hallock found a positive return to seniority for at least the first 15 years of seniority. Unable to reconcile his results with Ransom’s, Hallock suggested that collective bargaining at UMASS or an abundance of local employment options may have reduced the university’s monopsony power. We agree that UMASS may have special characteristics that reduce the representativeness of Hallock’s results. By contrast, our estimates of the effect of seniority on salary are based on a recent national faculty survey (National Survey of Postsecondary Faculty and National Center for Education Statistics, 1988). Like Hallock, we find that the marginal effect of seniority is positive until a relatively advanced level of seniority.

2. The seniority profile for faculty subgroups

Ransom estimated the effect of experience, seniority, and several professional and demographic characteristics on logarithm of faculty member’s salary. Because he used several faculty surveys with different survey items, Ransom’s definition and measurement of some of these variables, including seniority, varied somewhat across data sets. Ransom presented results for a sample of faculty from “All universities and colleges” as well as “High-quality”, or research universities. He found that when his regression included measures of experience, experience-squared, seniority, and seniority-squared, the coefficients on experience and seniority-squared were positive, but the coefficients on experience-squared and seniority were negative. When he used interval data for experience and seniority, Ransom found that the seniority variables were negatively correlated with salary by the second year for 1969 and the effect of seniority was negative by the 11th year for 1977. By contrast, Hallock found that the coefficients were positive on continuous experience and seniority variables, but negative on the quadratic terms using UMASS data. According to Hallock’s estimates, the marginal return to seniority was positive for the first 15 years and the average return remained positive until approximately 29 years of seniority.

For comparability with these earlier studies, we control for the same basic set of independent variables: degree type, race, gender, and academic discipline (represented by 15 “dummy” variables), as well as a continuous experience variable, a continuous seniority variable and the quadratic form of both these variables. Following Ransom’s work, seniority is defined as the number of years employed

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3 Ransom’s model is also described in “Monopsony in the Labor Market” (Boal and Ransom, 1997).
4 For example, according to a representative from the Massachusetts Society of Professors, the UMASS union, faculty salary increases were strong under the Dukakis administration (1980–88), but an era of freezes and cuts began in 1989, the year Hallock collected his data. Also, UMASS lacks some of the features that tend to raise the return to seniority at unionized campuses, such as a step system for salary increases.
5 NSOPF-88 was conducted by the National Center for Education Statistics. A total of 8382 faculty members from 424 academic institutions participated in the survey.
6 Ransom does not report whether he examined full-time faculty only or part-time employees as well. Hallock’s data base included full-time faculty in the full, associate, and assistant ranks only.
7 Unlike earlier faculty data tapes, the NSOPF-88 contains no regional variables, which distinguishes our regressions from Ransom’s work.
at one’s current institution. Our experience measure reflects the number of years since receipt of highest degree. This definition is equivalent to Hallock’s and Ransom’s experience measure for the 1973 data set. The dependent variable is the natural logarithm of basic institutional salary in 1987–88. Our sample is restricted to full-time faculty from all types of universities and liberal arts colleges.

To be consistent with Ransom’s findings, we would need to find a positive estimated coefficient for experience, a negative coefficient on experience-squared, a negative coefficient on seniority and a positive coefficient on seniority-squared (see Ransom, Tables 3, 5, and 6). As shown in the first column of Table 1, our estimated coefficients for seniority and seniority-squared have the opposite sign as Ransom’s and both are statistically significant at the 1% level. Ransom noted that, in cross-section data, faculty members with greater seniority may have lower productivity, on average, resulting in a negative return to seniority. However, the addition of 12 dummy variables representing the number of books, monographs, and articles published does not change the positive coefficient on seniority (see column 2).

Ransom concludes that among faculty at “large research-oriented universities” individuals with high seniority are paid less, on average, than individuals with less seniority. For Ransom’s sample of all university and college faculty, the coefficient estimates for most seniority variables are also negative using 1969, 1973, and 1977 data (see Ransom, Tables 2–4). In Table 1 we present our results for a sample of university faculty only (columns 3 and 4) and another subsample of faculty at research 1 and 2 universities as defined by the Carnegie classification system (columns 5 and 6). Again, we do not find negative seniority coefficients as did Ransom.

Table 2 facilitates comparison between our results and those of previous studies. The marginal effect of an additional year of seniority is given at specific points in time using regression coefficients.
from this study, the Hallock study and Ransom’s 1993 paper. We also include the marginal effect of an additional year of experience across all three studies. For our samples, the return to an additional year of seniority is positive until 20 years of seniority, with the exception of faculty at top research universities who experience a negative return at 10 years. Our results may support Ransom’s assertion that the positive effects of seniority do not last as long at research universities, or, at least, top research universities. Still, among these three studies, only Ransom finds a negative return to seniority at early career stages.

### 3. Discussion of results

As Ransom notes, the idea that long-term employment relationships in academia might be associated with lower salaries is “astonishing” given economists current theories regarding the relationship between pay and seniority. Our results using national survey data for 1988 call into question the generality of Ransom’s findings. For our sample of colleges and universities, increased seniority raises salary over a relatively lengthy period, although this period appears to be shorter at top research universities. Ransom explains his finding of a negative return to seniority by noting that
Table 3
Selected regression coefficients by tenure status and rank: 1988 NSOPF data (dependent variable = logarithm of annual salary)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Tenured Faculty</td>
<td>Untenured Faculty</td>
<td>Full Professors</td>
<td>Associate Professors</td>
<td>Assistants, Lecturers, Instructors</td>
</tr>
<tr>
<td>Experience</td>
<td>0.0333*** (0.0043)</td>
<td>0.0044 (0.0057)</td>
<td>0.0410*** (0.0066)</td>
<td>0.0145** (0.0066)</td>
<td>−0.0019 (0.0062)</td>
</tr>
<tr>
<td>(Experience)^2</td>
<td>−0.0005*** (0.0001)</td>
<td>−0.0001 (0.0002)</td>
<td>−0.0006*** (0.0001)</td>
<td>−0.0003 (0.0002)</td>
<td>0.0002 (0.0002)</td>
</tr>
<tr>
<td>Seniority</td>
<td>−0.0107*** (0.0038)</td>
<td>0.0254*** (0.0102)</td>
<td>−0.0074* (0.0031)</td>
<td>−0.0022 (0.0062)</td>
<td>0.0266*** (0.0088)</td>
</tr>
<tr>
<td>(Seniority)^2</td>
<td>0.0002*** (0.0001)</td>
<td>−0.0007 (0.0005)</td>
<td>0.7E-04 (0.0001)</td>
<td>0.0002 (0.0002)</td>
<td>−0.0005 (0.0004)</td>
</tr>
<tr>
<td>Sample size</td>
<td>3,315</td>
<td>1,694</td>
<td>2,003</td>
<td>1,396</td>
<td>1,559</td>
</tr>
<tr>
<td>Adjusted R^2</td>
<td>0.18</td>
<td>0.12</td>
<td>0.13</td>
<td>0.08</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Notes: Standard errors are given in parentheses. Samples include faculty at all universities and liberal arts colleges. Regressions include degree type, race, gender, academic discipline, and publications. Asterisks denote statistical significance at the one (***) and five (**), and ten (*) percent level. Faculty in the Other Ranks category are included in columns 1 and 2 but excluded from columns 3, 4 and 5 (leading to a lower total sample size).

academic employers might derive monopsony power from the great distances between academic institutions as well as the individualized nature of pay. Even accepting his finding of a negative return to seniority at research universities, this explanation is incomplete. If the entire labor market can be described as monopsonistic, why would the seniority wage premium be negative for research faculty only?

We examined various subgroups of faculty to determine the circumstances under which increased seniority might reduce faculty salary. Estimating separate regressions by gender, institutional size, institutional control (public versus private), and selected disciplines, we consistently found that the seniority coefficient was positive and the other estimated coefficients, seniority-squared, experience, and experience-squared, tended to be negative, positive, and negative, respectively. Only two characteristics were associated with a negative return to seniority: advanced academic rank and achievement of tenure. As shown in the first two columns of Table 3, the estimated effect of seniority on salary is negative among tenured faculty at all universities and liberal arts colleges, but positive for untenured academics. Upon stratifying by academic rank (columns 3–5, Table 3), the estimated coefficient on seniority is negative for full professors and associate professors, but positive for the ranks of assistants, instructors and lecturers.9

9On average, tenured and full professors have more seniority than other professors, which may be causing the negative seniority premium in those samples. The mean value of seniority is 16.8 for tenured faculty (versus 4.1 for untenured) and 18.1 years for full professors (versus 12.6 for associates and 5.2 for the assistant/lecturer/instructor category). Using the estimated coefficients for seniority and seniority-squared, however, the marginal return to an additional year of seniority remains positive until the 19th year for untenured professors and the 27th year for assistant/lecturers/instructors. So it is unlikely that the negative return found among senior professors simply reflects their greater levels of seniority.
These findings suggest that the tenure system, a unique institutional feature of academia, is related to an employer’s willingness to compensate seniority. If reduced faculty mobility accompanies the granting of lifetime employment, employers may gain monopsony power over tenured faculty. The result may be that additional years of service with the institution are no longer rewarded.

**References**


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10 As evidence of reduced mobility, 67% of tenured faculty in the NSOPF responded that they were “not at all likely” to seek out or accept another position.

11 The possibility that tenure would result in a negative seniority wage premium is supported by some previous literature. For example, it has been suggested that the award of tenure constitutes an implicit downward binding minimum wage for faculty (see Siow, 1994).