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Academic Labor Market: Comments

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Seniority and Monopsony in the Academic Labor Market: Comment

By KEVIN F. HALLOCK*

Michael Ransom's paper in the March 1993 issue of this *Review* makes an excellent case for monopsony in the academic labor market. Economists have long believed that seniority pays (see Robert Topel [1991] for a review and recent evidence). That is, the longer an individual with a given set of characteristics stays with an employer the more he or she is paid. Ransom argues that because of the monopsony power of the employer (universities) more senior workers suffer an earnings *loss*. As evidence, Ransom uses national survey data and data from the University of Arizona, and he cites a study by Emily Hoffman (1976) which uses data on faculty earnings from the University of Massachusetts at Amherst (UMASS) from 1974. The present paper further explores the work of both Ransom and Hoffman using faculty data from UMASS from 1989. This comment has three principal findings: (i) the return to seniority at UMASS is positive, at least for low levels of seniority, which is contrary to Ransom's results; (ii) faculty hired with tenure have significantly higher salaries (which supports the Ransom monopsony hypothesis); and (iii) sex discrimination, as described by Hoffman, is much lower in 1989 than it was 15 years prior.

The data for this work were obtained from the Office of Institutional Research and Planning and the Social and Demographic Research Institute at UMASS. I

only study full-time faculty in the 51 largest departments with the rank of professor, associate professor, and assistant professor (lecturers and instructors are omitted). The dependent variable used in all regressions is the logarithm of the nine-month salary. No grant support or prize money is included. I also use a dummy variable indicating whether or not the faculty member has earned a doctorate. In some of the analysis, control variables include sex, race (black, other race, or white), age, and experience (years since last degree). I also control either for departments or a group of eight "colleges," such as the College of Engineering or the College of Humanities and Fine Arts.

Ransom (1993) cites evidence from Hoffman (1976) of a negatively sloped seniority profile. Hoffman was primarily interested in issues of discrimination (see below). In the specification cited by Ransom, Hoffman estimated a least-squares salary regression with a linear seniority term which Ransom interpreted as a decrease of 0.2 percent per year (see Table 1 column 1). I use a similar specification to Hoffman's but redo the analysis with data from 1989. In column 2, one sees the same negative effect Ransom has described in data from the same institution 15 years later. In fact, rounded to three decimal places, the effect is exactly the same in the two years!

This result is not robust, however. In exploring these data more carefully, I do *not* see a strong case for a negative return to seniority. In fact, simply controlling for departments (not reported) instead of for fields (column 2), I find that the seniority coefficient becomes insignificant. Allowing for only a linear term in seniority implies negative returns to seniority in most specifications. However, allowing a quadratic in seniority reveals a concave seniority profile

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TABLE 1—RETURNS TO SENIORITY AT THE UNIVERSITY OF MASSACHUSETTS AT AMHERST, 1989

Independent variable	Hoffman model ^a		This study				Means
	(1)	(2)	(3)	(4)	(5)	(6)	
Age	yes	0.0036** (0.0008)	—	—	—	—	48.46 [10.12]
Experience	—	—	0.0408** (0.0023)	0.0314** (0.0026)	0.0316** (0.0026)	0.0078** (0.0024)	18.839 [9.924]
(Experience) ² /100	—	—	-0.0573** (0.0047)	-0.0381** (0.0055)	-0.0385** (0.0054)	-0.0056 (0.0047)	4.533 [4.033]
Seniority	-0.002* (0.0008)	-0.0018* (0.0008)	-0.0033** (0.0011)	0.0123** (0.0026)	0.0120** (0.0026)	0.0029 (0.0021)	14.708 [9.302]
(Seniority) ² /100	—	—	—	-0.0447** (0.0069)	-0.0408** (0.0070)	-0.0140* (0.0057)	3.028 [2.974]
Female indicator	-0.074** (0.0104)	-0.0283* (0.0120)	-0.0528** (0.0151)	-0.0449** (0.0148)	-0.0435** (0.0146)	-0.0226 [†] (0.0117)	0.187 [0.390]
Fields (8 indicators)	yes ^b	yes	yes	yes	—	—	N.A.
Departments (51 indicators)	—	—	—	—	yes	yes	N.A.
Full professor	yes	0.4924** (0.0157)	—	—	—	0.4334** (0.0194)	0.539 [0.499]
Associate professor	yes	0.2490** (0.0142)	—	—	—	0.2065** (0.0165)	0.265 [0.442]
R ² :	0.799	0.694	0.519	0.537	0.569	0.728	N.A.
N:	— ^c	1,051	1,051	1,051	1,051	1,051	1,051

Notes: In all regressions, the dependent variable is log(nine-month salary). Also included in the models are a constant term, whether the individual has a Ph.D., and race (black, white, other race). Standard errors are in parentheses; standard deviations are in brackets. The mean of the dependent variable is 10.860 [0.252].

^aThese results are from Hoffman (1976) which used faculty data from the University of Massachusetts at Amherst from 1974.

^bHoffman included 11 field indicator variables.

^cNot reported.

[†]Statistically significant at the 10-percent level.

*Statistically significant at the 5-percent level.

**Statistically significant at the 1-percent level.

(columns 4–5) with positive marginal returns to seniority for the first 15 (or so) years of seniority.¹ The quadratic in seniority makes practical sense, as the squared term is always significant.

Ransom (1993) studies data from many sources, including the University of Arizona. His general finding is that of a negative seniority profile using a quadratic in seniority. That is, he finds a negative coefficient on the first-order seniority term and a positive coefficient on the second-order term. He finds, almost universally, that the longer an academic stays with his or her employer, the *less* he or she is paid. Graph-

ing the derivative of earnings with respect to seniority, controlling for demographics, I get a picture that is very much the mirror image of Ransom's. His graph slopes down, reaches a trough, then slopes back up. If I use the coefficients from column 5 in Table 1 the seniority profile peaks at 14.706 years (mean seniority is 14.708 years), and the marginal effect of an additional year of seniority evaluated at the mean is zero.²

The results for positive returns to early years of seniority are quite robust. If instead of controlling for a linear or quadratic function of experience, I control for such a function of age, the results are qualitatively

¹Average returns remain positive until about 29 years of seniority.

²The inclusion of rank variables makes the seniority profile much flatter.

similar. Controlling for departments, instead of fields, also makes little difference. Finally, including rank in the specification reduces the magnitude of the seniority effect (see column 6), but the exclusion of rank is attractive since it is probably endogenous. The addition of a publications variable as a measure of productivity does not change the results either.

The returns to seniority, experience, and job mobility are inherently related. If all individuals had the same starting age and never moved, one could never estimate these effects separately. One better way to identify the return to seniority would be to examine the differences between *tenured* faculty hired from the outside versus those promoted from within. Twelve percent of the tenured faculty in 1989 were outside hires. Results from regressions much like those presented in Table 1 with the addition of a dummy variable which is equal to 1 if the individual was hired with tenure and equal to 0 if the person was granted tenure from within the university show that those hired with tenure receive 7–18-percent higher salary *every year* relative to those who were granted tenure from within the university depending on whether fields, departments, or rank are accounted for.

This result supports the Ransom (1993) monopsony argument and may seem to conflict with the findings above. However, even though those who are hired with tenure are paid relatively more (and they have low seniority and high earnings) the seniority profile is not convex. Allowing for different seniority slopes for the outside-hire and non-outside-hire groups by including interaction terms of seniority and seniority-squared with the dummy variable for outside hire shows that the result of higher wages for outside-hires is robust.³ It would be interesting to see whether this phenomenon is present in other universities or in other labor markets.

³A standard Oaxaca decomposition (see Ronald Oaxaca, 1973) corroborates this point.

One explanation for why these results differ from Ransom's is that faculty at UMASS may have more local options for employment than their counterparts in Arizona due to the five-college system in the Pioneer Valley of Massachusetts. Attempts to explore this were not successful, perhaps due to small sample sizes. John Penrod (1994) provides an interesting analysis of this issue using national data.

Another, perhaps much more important, issue is that of the faculty labor union at UMASS. The collective-bargaining agreement at UMASS has provisions for "cost of living" raises which when given are given to *all* faculty. Some faculty also enjoy periodic merit raises from their department personnel committees or deans, and some are granted "matching offers" if they get outside offers. Debra Barbezat (1989) finds that in colleges and universities unionization increases the return to seniority. Since the University of Arizona does not have such a union, this may provide a partial explanation for the disparity.

Note also that the "sex discrimination" coefficient has dropped. Hoffman's (1976) estimate in Table 1, column 1 is 7.4 percent, and the comparable one using my data in column 2 is 3 percent. Rank, however, may be endogenous in this context also. If rank is dropped from the specifications, Hoffman's estimate is 16 percent and mine is 5 percent (column 3). Hallock (1991) studies issues of sex discrimination at UMASS in more detail.

In summary, Ransom (1993) outlines an interesting case for monopsony in the academic labor market. Using a simple specification cited by Ransom, I have replicated a result he cites using data from UMASS. It appears, though, that the negative seniority profile cited by Ransom is not robust for data from UMASS. In fact, I find a concave seniority profile which is robust to various specifications. This is perhaps due to the faculty labor union at UMASS. However, outside-hires have higher salaries than those promoted from within. Therefore, it may be generally true that returns to seniority are negative for academics, but these data do not fully support such a claim.

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