Job Mobility Decisions and Negative Returns to Seniority Across the Program Quality Distribution: Are Top Public Ph.D.-Granting Programs Different?

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1. Introduction

Job mobility is prohibitively costly for many academics, particularly those with significant ties to their current institution. Ransom (1993) and others demonstrate that by making the repeated decision not to relocate faculty cede monopsony power to their current institutions, enabling below market salary increases over time. The existence of such negative returns to seniority has received considerable empirical attention (Bratsberg, Ragan, and Warren (2003), Moore, Newman, and Turnbull (1998), Ransom (1993), Hoffman (1976) and many others). Researchers traditionally test for its presence by including independent variables indicating both years of total academic experience and years of seniority at the current institution in log salary regressions and interpreting negative coefficients on the seniority terms as indicating the existence of negative returns to seniority. While the results vary somewhat depending on the samples analyzed and the additional independent variables controlled for, previous work has tended to support the general existence of negative returns to seniority in academic labor markets. One issue that existing studies have failed to address is the degree to which negative returns to seniority exist across the program quality distribution within specific disciplines. This is unfortunate, as salary determination can, and perhaps even likely, does differ across a discipline's program quality distribution. We add to the existing literature by asking whether top public Ph.D.-granting economics programs exert monopsony power over their faculty to the same extent as lower-ranked programs.

Previous studies of the economics discipline have failed to address this question because they have only possessed individual salary data on a small number of rather homogeneous lower-ranked programs. Bratsberg, Ragan, and Warren (2003) analyze panel data on 176 tenure-track faculty at five identified Midwestern universities while Moore, Turnbull, and Newman (1998)

analyze cross-sectional data on 142 tenure-track faculty at nine unidentified state universities. According to the authors themselves, the programs in both of those studies could be considered mid-level and thus as noted in Moore, Turnbull, and Newman "one should not infer that our empirical results generalize to the Top 20 programs."

Thanks to the 1966 Freedom of Information Act (FOIA), beyond the legwork involved there is little to prevent a researcher from compiling a much more sizable faculty salary data set that enables comparisons across the program quality distribution.[1] The current study takes advantage of this fact to construct a unique data set containing detailed information on the current salaries and career employment and publication histories of 1,009 tenure-track faculty from 53 of the 68 public Ph.D.-granting economics programs ranked between #7 and #104 in the 1995 NRC rankings of the top 106 such programs in the U.S. Analyzing this improved data set allows us to paint a more complete picture of how salary determination differs across the program quality distribution. We find that while previous studies appear to generalize well to the wider distribution of public programs outside the top 20 they do not generalize to programs within the top 15 for whom we estimate that negative returns to seniority do not exist. Specifically, we estimate (1) negative returns to seniority to exist within programs ranked outside the top 15 but not within programs ranked inside the top 15, (2) more frequent movers to observe statistically significant premia, all else equal, in lower-ranked but not in top programs, and (3) top program faculty to be more likely to move at all points in their career than lower-ranked program faculty. We hypothesize that these difference result from top 15 public program faculty being able to more easily generate the competitive outside offers necessary to make their moving threat credible enough that their programs are unable to develop monopsony power over their salaries.

2. Theoretical Model

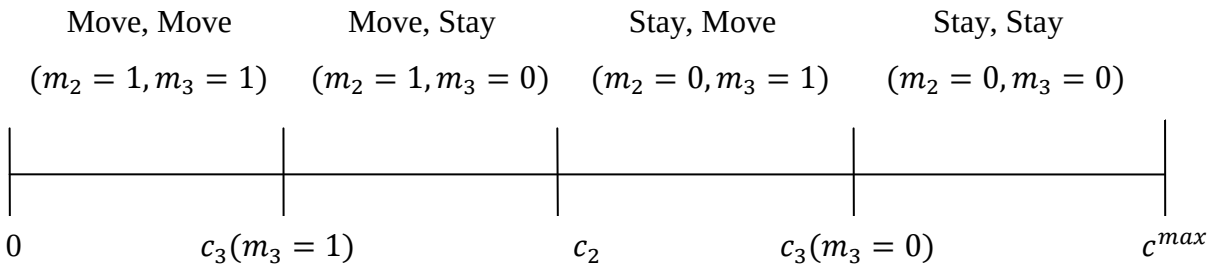
Following Black and Loewenstein (1991), we develop a model demonstrating the important role that potential job mobility plays in the determination of academic salaries. In this model, both sides realize that the employer-worker match can be changed in all periods subsequent to the first; rational workers decide whether to move by comparing the expected benefits of moving to the expected costs, which are heterogeneous and not directly observable to the firm; and salary determination is a repeated interaction game, introducing the potential for firms to learn about the likely magnitude of a worker's unobserved moving cost by observing whether the worker decided to move or stay in each period. Over time, movers are judged to have lower unobserved moving costs, indicating higher probabilities of future moves and stayers are judged to have higher unobserved moving costs, indicating lower probabilities of future moves. Such information provides a bargaining advantage to the firm that it exploits to generate monopsony power over the worker, thereby enabling wage offers to repeated stayers that fall below their value marginal product.

To formalize our three-period model, start by assuming a competitive labor market and profit-maximizing firms. Let V_1, V_2, and V_3 represent the worker's value marginal product in periods 1, 2, and 3, such that $V_1 \leq V_2 \leq V_3$ (with increases in V resulting from human capital accumulation) and let d be a discount factor known to both worker and firm. Let m_2 and m_3 represent the worker's observed moving/staying decision in the latter two periods, with $m_2 = 1$ if the worker moves at the beginning of period 2 and $m_3 = 1$ if the worker moves at the beginning of period 3. Individual workers possess a heterogeneous moving cost, c, which encompass differences in locational preferences, relocation expenditures, and search and psychic

costs. Assume that firms do not know each individual worker's moving cost, but do know that within the population of workers c is uniformly distributed on the interval $(0, c^{max})$.

Because workers make their moving/staying decisions by comparing the individual moving cost to differences in wage offers from different employers, there exist threshold moving costs that divide workers by the moving/staying decisions they make at the beginning of each period subsequent to the first. Define c_2 as the critical value of c such that workers move at the beginning of period 2 if $c < c_2$ and stay if $c > c_2$. Define $c_3(m_2 = 1)$ as the critical value of c such that workers who move at the beginning of period 2 also move at the beginning of period 3 if $c < c_3(m_2 = 1)$ and stay if $c > c_3(m_2 = 1)$. Finally, define $c_3(m_2 = 0)$ as the critical value of c such that workers who stay at the beginning of period 2 move at the beginning of period 3 if $c < c_3(m_2 = 0)$ and stay if $c > c_3(m_2 = 0)$.

Combining these definitions, it must be true that $c_3(m_2 = 1) \leq c_2 \leq c_3(m_2 = 0) \leq c^{max}$, meaning that individual moving/staying decisions relate to underlying moving costs in the following manner



Workers with different observed moving/staying decisions are paid different wages in different periods. Defining the relevant wages in each period as w_1, $w_2(m_2)$, $w_3(m_2, m_3)$, we can write the worker's decision rule and subsequent lifetime earnings as

If	Period 2	Period 3	Lifetime Earnings
$c \geq c_3(m_2 = 0)$	Stay	Stay	$I(0,0) = w_1 + d \cdot w_2(0) + d^2 \cdot w_3(0,0)$
$c_3(m_2 = 0) > c \geq c_2$	Stay	Move	$I(0,1) = w_1 + d \cdot w_2(0) + d^2 \cdot [w_3(0,1) - c]$
$c_2 > c \geq c_3(m_2 = 1)$	Move	Stay	$I(1,0) = w_1 + d \cdot [w_2(1) - c] + d^2 \cdot w_3(1,0)$
$c_3(m_2 = 1) \geq c$	Move	Move	$I(1,1) = w_1 + d \cdot [w_2(1) - c] + d^2 \cdot [w_3(1,1) - c]$

The solution to the model requires the determination of seven different wages, w_1, $w_2(0)$, $w_2(1)$, $w_3(0,0)$, $w_3(1,0)$, $w_3(0,1)$, $w_3(1,1)$. Recognizing that any point in time, t, workers are offered wages that maximize their employers' expected profit from t forward (conditional on knowledge available to the firm at time t) and that profit-maximizing firms set wages for newly-hired workers at levels that just set expected profit to 0, we can determine the seven wages as

$$W_1 = V_1 + d\left(\frac{c^{max}}{4}\right) + \left(1 + \frac{d}{4}\right)$$

$$W_2(0) = V_2 - \left(\frac{c^{max}}{2}\right)\left(1 + \frac{3}{4}d\right)$$

$$W_2(1) = V_2 + d\left(\frac{c^{max}}{8}\right)$$

$$W_3(0,0) = V_3 - \left(\frac{c^{max}}{2}\right)$$

$$W_3(1,0) = V_3 - \left(\frac{c^{max}}{4}\right)$$

$$W_3(0,1) = V_3$$

$$W_3(1,1) = V_3$$

Comparing these optimal self-enforcing wages provides several empirically testable hypotheses concerning salary formation and individual behavior in the academic labor market. Starting with salary formation: (1) the difference between W_1 and V_1 is positive and greater in magnitude than the difference between W_2 and $V_2$and W_3 and V_3, suggesting that *the wages paid to newly-hired faculty should be relatively high compared to the wages paid to more experienced faculty*;[2] (2) wages paid to third-period movers exceed wages paid to third-period stayers by

more than wage paid to second-period movers exceed wages paid to second-period stayers (i.e. $(W_3(1,1) - W_3(0,0) > W_2(1) - W_2(0))$ suggesting that *negative returns to seniority should be observed in the academic labor market*; and (3) $W(1,0)$ exceeds $W(0,0)$, suggesting that *a stayer's current salary should be a positive function of the number of moves that he or she has made in the past*. Turning to individual behavior: (4) the critical value for a third-period move for second-period stayers exceeds the critical value for a second-period move for all individuals $(c_3(m_3 = 0) > c_2)$, suggesting that *the probability of moving should be a decreasing function of seniority* and (5) the critical value for a third-period move for second-period movers is less than the critical value for a third-period move for second-period stayers (i.e. $c_3(m_3 = 1) < c_3(m_3 = 0)$), suggesting that *workers who have moved in the past should be more likely to move in the future*.

Understanding why the existence of negative returns to seniority might differ for top and for lower-ranked programs requires a more thorough consideration of the individual components of the moving cost term. While locational preferences, relocation expenditures and psychic costs are certainly significant, search costs are one of the most important components of the moving decision, as before one has the opportunity to decide whether to move one must first generate a competitive outside offer. Consider how search costs are likely to compare between faculty in top programs and faculty in lower-ranked programs. Because faculty in top programs are likely to be considered among the top academics in their field, they should be able to generate outside offers more easily than faculty in lower-ranked programs who are likely to be considered farther down the academic food chain. If so, then search costs should be lower for faculty in top programs and the interval of moving costs, C_{top}^{max}, for them should be smaller than the interval of moving costs for faculty in lower-ranked programs, C_{lower}^{max}. Accordingly, the differences in each

of the second and third period wages above should be smaller for faculty in top programs (i.e. $\left[V_3 - (C_{top}^{max} \,/\, 4)\right] < [V_3 - (C_{lower}^{max}/4)]$, etc.), meaning that top programs should be less able to exert monpsony power over their faculty and negative returns to seniority should be less likely observed for faculty in top programs. Moreover, because their moving costs are lower, faculty in top program should be more likely than faculty in lower-ranked programs to move at every point in their careers.

The empirical work below assesses the degree to which the above model describes observed salary formation and individual job moving behavior across the quality distribution of public Ph.D.-granting economics programs.

3. Data

In August 2007, we began requesting salary data for faculty members at the 68 public programs listed among the 1995 NRC Rankings of the top 106 public and private Ph.D.-granting economics programs in the U.S. The salaries we collected correspond to annual salaries from the 2006-2007 academic year, henceforth called AY2006 salaries. We received reliable current salary information from the 53 programs listed in table 1. As indicated there, our current sample reflects a much more complete cross-section than those analyzed in previous studies of the economics profession and our sample of 1,009 tenure-track faculty (excluding those with administration appointments) is a vast improvement over the samples previously studied.

Individual-specific non-salary data are collected from publicly-available sources. Gender and current academic rank are determined from departmental websites and/or individual homepages. Individual employment histories are determined from CVs that the vast majority of faculty members currently post on their individual homepages.[3] Individual-specific peer-

reviewed publication data through 2007 are collected from *Econlit*, which is the American Economic Association's bibliography of economics literature throughout the world. The database currently contains information on articles published in more than 700 journals, including all the major field and general interest economics journals. To account for potential differences in the quality and/or likely importance of different publications, we distinguish between three different types of publications: (1) articles in the top 5 economics journals according to Scott and Mitias (1996)[4], (2) articles in the remainder of their top 36 economics journals, which are primarily top field journals, and (3) articles in all other *Econlit* listed economics journals. Finally, we rank economics programs according to Siegfried and Stock's (2001) multi-tier breakdown of programs in the 1995 NRC rankings (1-6, 7-15 and 16-30, 31-60, and 61-106). Given that UC Berkeley is the highest-ranked public program, at #7 overall, we do not include *current* tier 1 faculty in our sample (although we do observe several current tier 2-5 faculty who previously served as tier 1 faculty). While these rankings define four program tiers for which we have data, we quickly realized that across all of our metrics statistical differences did not exist between tiers 3, 4, and 5.[5] For this reason, in the empirical work below we make comparisons between TIER 2 and NOT TIER 2 programs.

Figure 1a indicates that substantial within-tier overlap exists in the observed annual salaries of assistant, associate, and full professors. Within both tiers, the bottom quartile of full professors generally earn the same or less than the top quartile of associate professors and the bottom quartile of associate professors generally earns the same or less than the median of assistant professors. As such, it appears that salary compression, and even salary inversion, exists within the economics profession. While true, the overlap is least pronounced within tier 2 programs, where the annual salary of assistant professors at the 75th percentile barely exceeds the

annual salary of associate professors at the 25th percentile and is more pronounced within lower-ranked programs, where the median salary of assistant professors is close to the median salary of associate professors. Nonetheless, the data represented here appear consistent with prediction #1 that *the wages paid to newly-hired faculty should be relatively high compared to the wages paid to more experienced faculty*. We note that while the box-plots presented here are constructed across rather broad program tiers, box-plots constructed for individual programs exhibit similar degrees of overlap (and are available on request).

In addition to these within-tier differences, Figure 1a demonstrates that significant cross-tier variation exists in observed annual salaries of faculty within a given rank. With the exception of a few notable outliers in lower-ranked program distributions, tier 2 faculty appear to substantially out-earn their lower-ranked peers. Specifically, within each academic rank tier 2 faculty at the 25th percentile of their distributions observe higher annual salaries than not tier 2 faculty at the 75th percentile of their distributions.

Why might such significant cross-tier differences exist? The generally accepted answer is that faculty in top programs possess more prolific research profiles which translate to greater value marginal products (V_1, V_2, and V_3 in our theoretical model) and higher annual salaries in the academic labor market. Figure 1b suggests that such anecdotal evidence is likely in large measure correct, as the distributions of top 5 publications, including outliers, closely mirror the distributions of AY2006 annual salaries, suggesting that observed differences in publishing success in top economics journals are likely important determinants of observed differences in current annual salaries.

Our theoretical model suggests that an individual's moving decision depends not only on his or her unobserved moving cost but also his or her labor market opportunities. Hence, if

observed current annual salaries are related to underlying differences in publishing success, then observed differences in moving decisions should also be related to those differences. Figures 2, 3a, and 3b shed light on the degree to which this is true for individuals in our data set. While we cannot directly observe the specific motivations behind each individual move, the frequency and timing of observed moves might shed light on the reasons for the individual's decisions. To see how, consider that we might divide individuals as to whether they make: NO MOVES, ONE MOVE EARLY, ONE MOVE LATE, or MULTIPLE MOVES. How do individual motivations likely differ across these possibilities? Individuals observed making no moves likely fall into two groups: those who are considered valuable enough to merit competitive salary increases in order to counter potential outside offers and those who are considered valuable enough to have received tenure but not to merit competitive salary increases. We might therefore expect some non-movers to earn relatively high current annual salaries and some to earn relatively low current annual salaries. What about individuals choosing to move at least once? As demonstrated in our theoretical model, individuals are more likely to move in each subsequent period if they possess higher value marginal products which lead to higher wage offers. Accordingly, we might expect individuals observed making multiple moves to be among the stars of the profession who can easily generate high outside offers. Finally, what about individuals observed moving exactly once? Individuals moving once early in their career (<8 years of experience) likely do so because they are poorly matched with their initial institution and realize (or are forced to realize) relatively early that they should move to a new program that is a better fit with their talents. Individuals moving once later in their career (8+ years of experience) likely do so because they are prominent enough to merit substantial enough outside offers that entice them to leave their initial programs.

According to figure 2, greater percentages of faculty in top programs, nearly 27 percent, are multiple movers while greater percentages of faculty in lower-ranked programs, more than 25 percent, are one-time early movers. Figures 3a and 3b provide insight into differences resulting from and likely causes underlying the observed differences in moving decisions. Notably, the groups expected to be drawn from the top end of the faculty prominence distribution, multiple and one-time late movers, generally receive higher annual salaries and publish more articles in top 5 economics journals, suggesting that they are indeed likely being hired away from their initial programs due to their greater prominence within the profession. As further expected, the distributions for one-time early and non-movers appear to be at least somewhat bimodal, with notable outliers in both groups annual salaries and publishing enough top 5 articles to merit competitive salary increases that keep them resembling their multiple and one-time late moving peers. This leaves individuals at the middle and bottom of these two distributions for the two groups for whom the annual salaries and top 5 publications lag behind their above mentioned peers and who appear more likely to have suffered negative returns to seniority.

4. Results

The empirical analysis below evaluates our theoretical predictions in two stages: In the first, we estimate standard log wage regressions that control for seniority, experience, job mobility, publishing success, and individual characteristics. In the second, we use discrete-choice hazard analysis to construct survival-without-moving functions by years of experience and seniority and to estimate the multivariate relationship between moving decisions and the number of prior observed moves and years of experience.

The first two columns of table 2 replicate previous empirical specifications that control for the quadratic effects of both *experience* (the number of years in any tenure-track position) and *seniority* (the number of years on the tenure-track at the current institution) as well as publishing success and sex. Focusing on column 2, for our subset of not tier 2 programs we estimate that, all else equal: (1) negative returns to seniority exist, with the point estimate for each additional year of seniority being roughly 2.3 percent, (2) females do not earn significantly different salaries than males, (3) the impact of additional years of experience to be concave, and (4) the return top 5 publications to be roughly 3 percent. These results are remarkably similar to those in Moore, Newman, and Turnbull (1998), suggesting that their results do indeed generalize well to programs outside the top 20.

What about more highly-ranked programs, such as public institutions in the top 15 of the 1995 NRC rankings? Because we possess data on such programs, we are able to examine whether negative returns to seniority are estimated to exist within top programs as well as within lower-ranked programs. The results in column 1 suggest that they do not, as both estimated seniority terms lack statistical significance for tier 2 faculty, indicating that top programs differ from lower-ranked programs in the degree to which they exploit monopsony power over their faculty. Taken together, our results provide empirical evidence consistent with prediction #2 that "*negative returns to seniority should be observed in the academic labor market*" for lower-ranked programs but not for tier 2 programs. As mentioned above, we hypothesize that this is due to faculty in top programs being more easily able to generate the competitive outside offers that require their current programs to offer more competitive salary increases over time.

The final two columns of table 2 examine the economic return to job mobility in a more detailed way and suggest that within lower-ranked programs, all else equal, faculty moving

multiple times earn significantly higher annual salaries than faculty who never move but that such significant differences do not exist for faculty in top programs. What might explain this difference? A possible explanation is that several lower-ranked programs have recently aggressively pursued prominent economists in the latter stages of their careers in hopes of improving their program's standing within the profession. The high salaries required to entice these stars to move places them disproportionately high on the within-program pay scale relative to non-moving faculty within their new programs. At the same time, while prominent economists frequently move between top programs, the apparent inability of top programs to exploit monopsony power over non-moving faculty prevents those multiple movers from earning disproportionately higher salaries. In summary, we find empirical evidence consistent with prediction #3 that "*a stayer's current salary should be a positive function of the number of moves that the worker has made in the past*" for lower-ranked programs but not for top programs. We do note, however, that because declined outside offers are not a matter of public record, we do not know if and when individual faculty members received competing offers, a fact that might, to some degree, contribute to the lack of statistical relationship between observed moves and current annual salary for tier 2 programs.

Turning to our predictions related to individual moving decisions, figures 4a and 4b demonstrates that across all program ranks the greater an individual's experience (age) and seniority the less likely he or she is to be observed moving. In fact, after roughly 8 years of seniority the estimated survival-without-moving functions begins to flatten for both tier 2 and not tier 2 faculty while after 17 years they become almost perfectly horizontal. At the same time, while the estimated functions appear quite similar over the first 6 years of experience and seniority, they drop off more steeply for not tier 2 faculty beyond that point, suggesting that after

the initial tenure decision, faculty in lower-ranked programs are indeed estimated to be less likely to move in any subsequent period than faculty in top programs. We note that log-rank tests for equality of survival functions suggest that the estimated survival-without-moving functions in figures 4a and 4b are statistically different for tier 2 and not tier 2 programs. Combined, these results provide empirical evidence consistent with predictions #4 that *the probability of moving should be a decreasing function of seniority* for both top and lower-ranked programs, but that faculty in top programs are more likely to move at almost all points in their career.

As a final point, table 3 explores the relationship between the number of prior moves and the likelihood of making a future move, controlling for years of experience and once again suggests difference between tier 2 and not tier 2 faculty. In particular, we find that controlling for years of experience, faculty in lower-ranked programs who have moved more often in the past are significantly more likely to move in the future but that the number of prior moves is statistically unrelated to the likelihood of future moves for faculty in top programs. We suspect that this is due to the fact that top programs appear unable to exploit negative returns to seniority and therefore faculty in such programs do not need to move to keep their salary increases competitive. In summary, these results provide empirical evidence consistent with predictions #5 that *workers who have moved in the past should be more likely to move in the future* for faculty in lower-ranked programs but not in top programs.

5. Conclusions

Previous studies of salary determination in academic labor markets have suffered from either being narrowly focused on samples drawn from an extremely small subset of schools or

from analyzing national surveys that both amalgamate multiple disciplines and college types and that lack the detailed individual-specific data required to analyze the effects of certain individual behavior, such as job switching. Both approaches diminish the generalizability of the results across the program quality distribution within a specific discipline. In doing so, they fail to address the possibility that both programs and individual faculty within the top of the program quality distribution behave differently than programs and individual faculty within lower-ranked programs.

We improve on previous studies by collecting individual-level salary data and detailed individual-level employment and publication histories on a large sample of more than 1,000 academic economists drawn from a broad cross-section of 53 different NRC-ranked public Ph.D.-granting programs. The breadth and depth of our proprietary data allow us to compare and contrast several aspects of the salary formation process between public Ph.D.-granting programs ranked among the top 15 overall programs in the 1995 NRC ranking and public Ph.D.-granting programs ranked outside the top 15. Empirical results suggest that job mobility decisions and the economic impact of those decisions differ between top and lower-ranked programs. In particular, we find that all else equal significant negative returns to seniority exist for lower-ranked programs but not top 15 programs; that all else equal moving more frequently in ones career is associated with a significantly higher current annual salary within lower-ranked but not within top 15 programs; and that all else equal for given levels of experience and seniority faculty within top 15 programs are more likely to move in subsequent periods than faculty within lower-ranked programs.

Together, these results paint a clearer picture of salary formation for academic economists. Primarily, the market (at least within NRC-ranked public Ph.D.-granting programs)

appears to be quite proficient at identifying and rewarding talent. The highest observed salaries in our broad sample of public Ph.D.-granting economics programs are paid to faculty within programs ranked among the top 15 overall programs in the 1995 NRC rankings and even within those top programs the very highest compensation appears to be allocated to those stars who relatively many top 5 articles. At the same time, we estimate that high-quality peer-reviewed publications are significantly rewarded in the market, with each additional top-5 publication estimated to increase an individual's observed annual salary by roughly the same amount as each additional year of work experience. Finally, we estimate that moving more frequently increases the annual salary of individuals currently program outside the top 15 by nearly 9 percent, which is more than three times the estimated impact of additional top 5 articles for such individuals. In summary then, it appears that the best way to see consistent salary increases throughout one's career as an academic economist is to continually prove one's value to the market by actively publishing in high quality outlets and/or being willing to pursue and accept more lucrative outside offers.

Notes

[1] This act gave citizens the power to request a substantial amount of information from federal government files. While the law did not apply to state governments, most states have since enacted their own FOIA policies that enable citizens to request state government records. As such, it should be possible to compile faculty salary data on the vast majority of public universities in the U.S.

[2] In this model, if the difference between V_3 and V_1 is less than $\frac{c^{\max}}{2} + d\left(\frac{c^{\max}}{4}\right) + \left(1 + \frac{d}{4}\right)$ then W_1 will exceed $W_3(0,0)$ and salary compression will be so extreme as to result in actual salary inversion. This outcome is most likely to occur if the worker has seen little increase in his or her value marginal product over time, a situation likely to be evidenced by a relative failure to produce peer-reviewed publications.

[3] Given the importance of the CV to establishing one's professional reputation, nearly all academics post a current version of their CV on the individual homepages.

[4] These are the *American Economics Review*, *Econometrica*, the *Journal of Political Economy*, the *Quarterly Journal of Economics*, and the *Review of Economics and Statistics*.

[5] We verified this through statistical tests for each of our empirical analyses below and in all cases we were unable to reject the hypothesis that there are no differences between tier 2 and not tier 2 programs.

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Table 1
Programs for Which We Have Salary Data

Tier 2		Not Tier 2			
1995 NRC Rank	Program	1995 NRC Rank	Program	1995 NRC Rank	Program
7	UC Berkeley	16	UCSD	65	South Carolina
11	UCLA	20	Maryland	66	SUNY Binghamton
13	Michigan	24	Virginia	67	Arizona State
15	Wisconsin	25	UNC Chapel Hill	69	Georgia State
		26	UW Seattle	71	UC Riverside
		27	Michigan State	73	Kansas
		28	Illinois	74	Auburn
		30	Iowa	75	Clemson
		31	UT Austin	76	Wyoming
		33	Texas A&M	77	Southern Illinois
		35	Ohio State	78	SUNY Albany
		36	Iowa State	83	Washington State
		37	Arizona	84	Connecticut
		38	UC Davis	86	Oklahoma State
		41	Florida	87	Nebraska
		42	NC State	90	Utah
		44	Indiana	92	West Virginia
		49	UC Santa Barbara	93	Missouri
		50	Purdue	97	Cincinnati
		51	Massachusetts	98	UT Dallas
		57	Houston	100	Colorado State
		58	SUNY Buffalo	101	New Hampshire
		62	Florida State	103	Co. School of Mines
		63	Georgia	104	Utah State
		64	Kentucky		

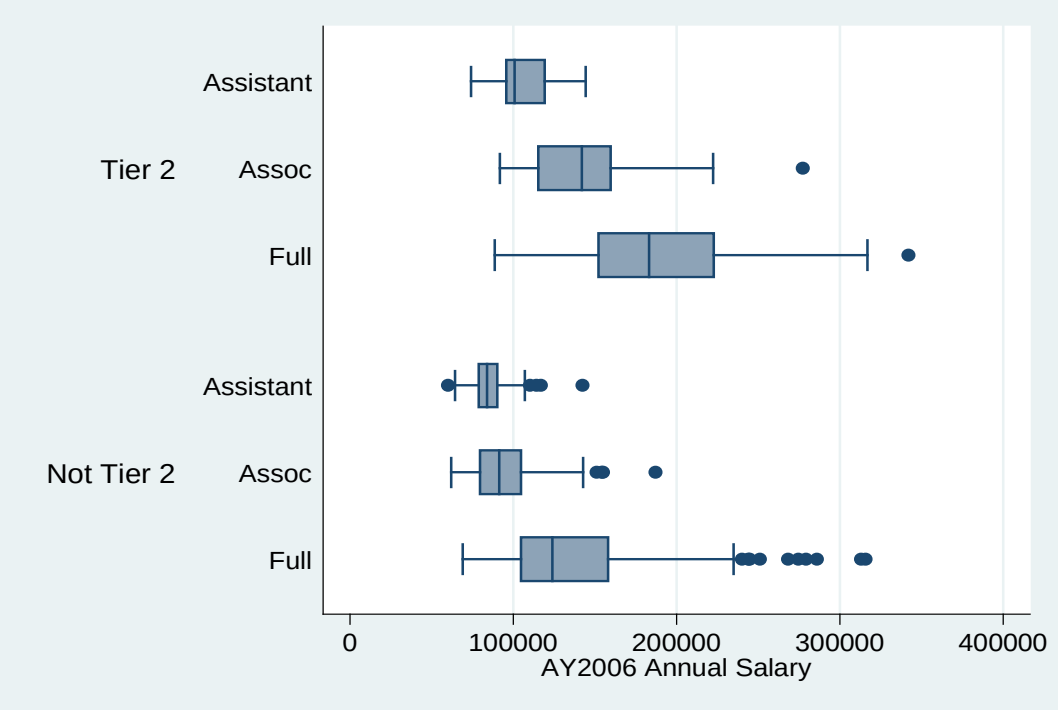

Figure 1a
Boxplot of Current Salary by Program Tier and Academic Rank

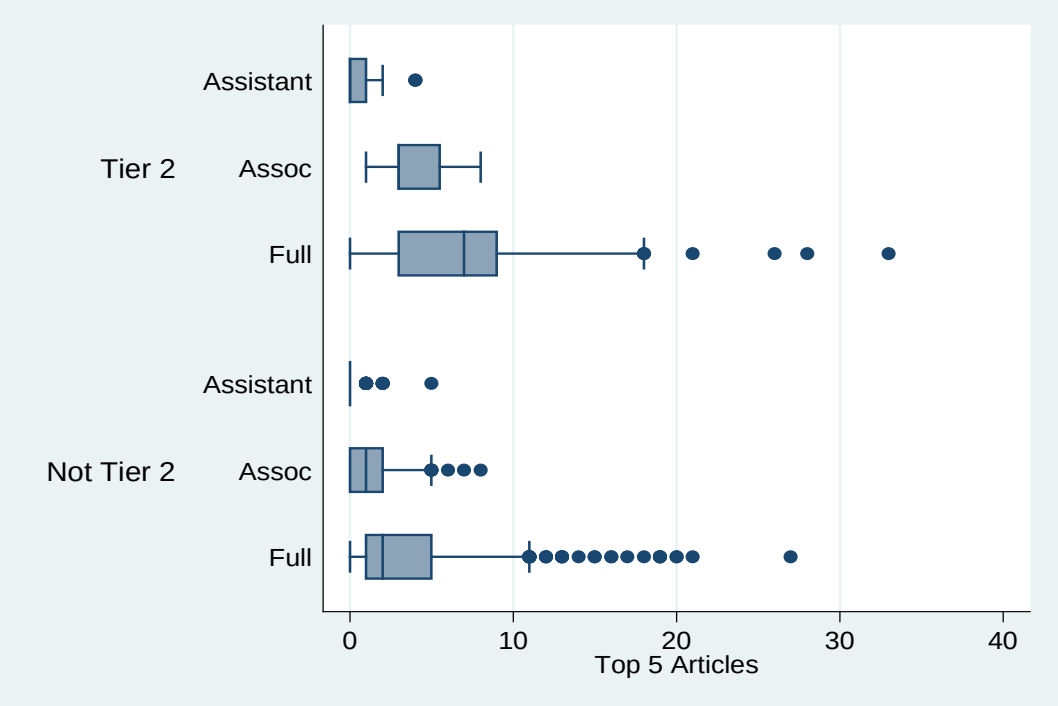

Figure 1b
Boxplot of Lifetime Top 5 Articles by Program Tier and Academic Rank

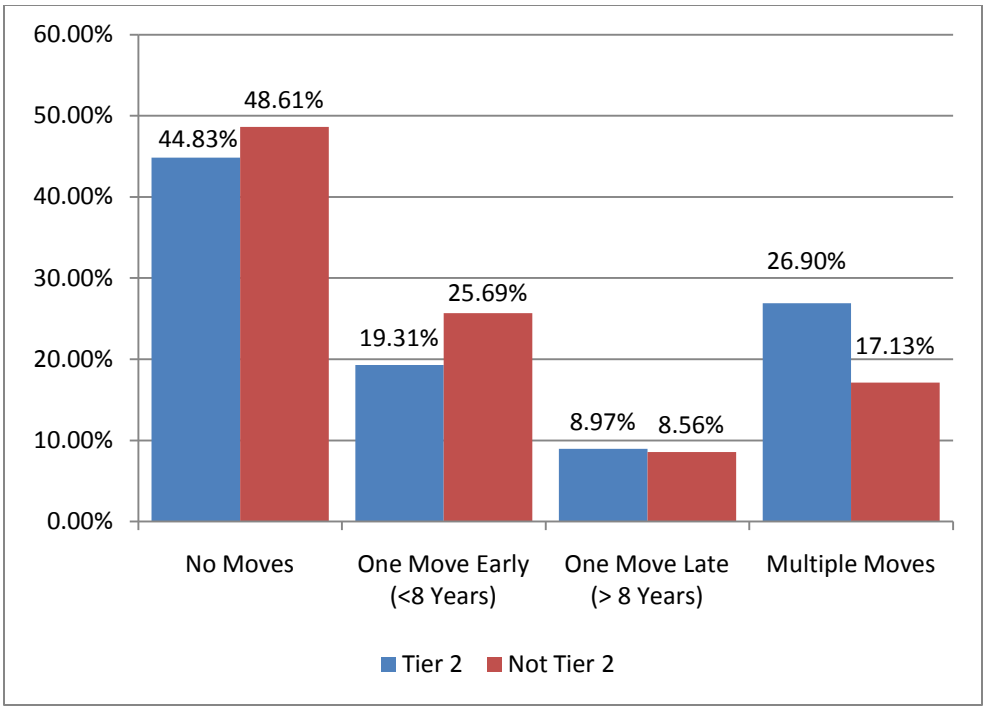

Figure 2
Histogram of Job Mobility Patterns By Program Tier

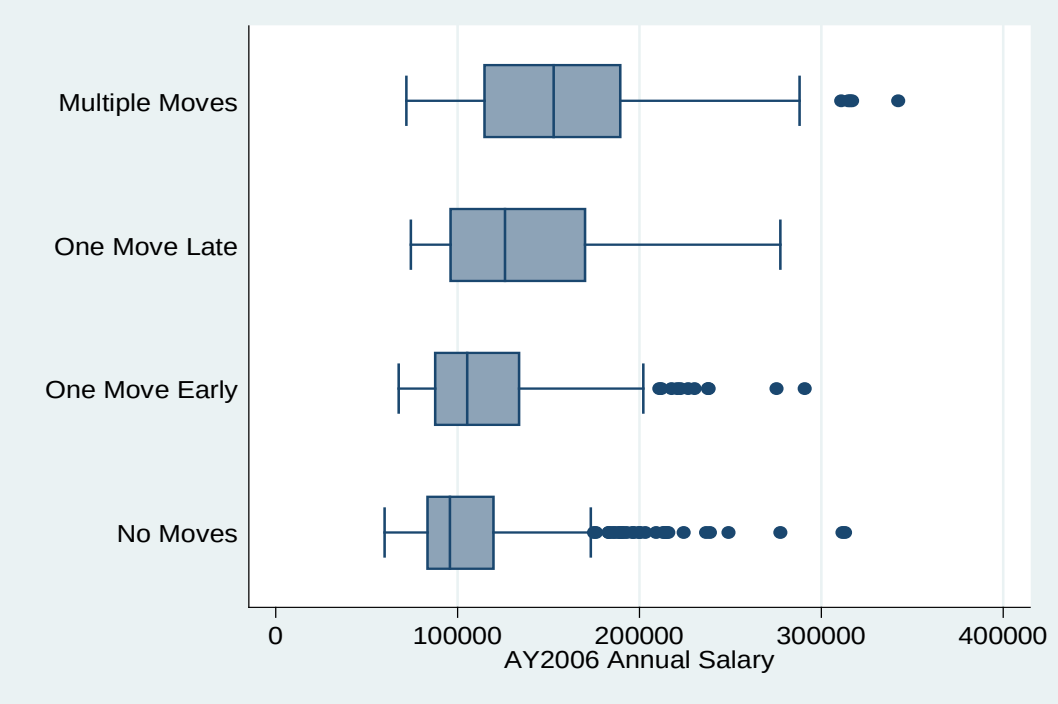

Figure 3a
Boxplot of Current Salary by Observed Job Mobility Pattern

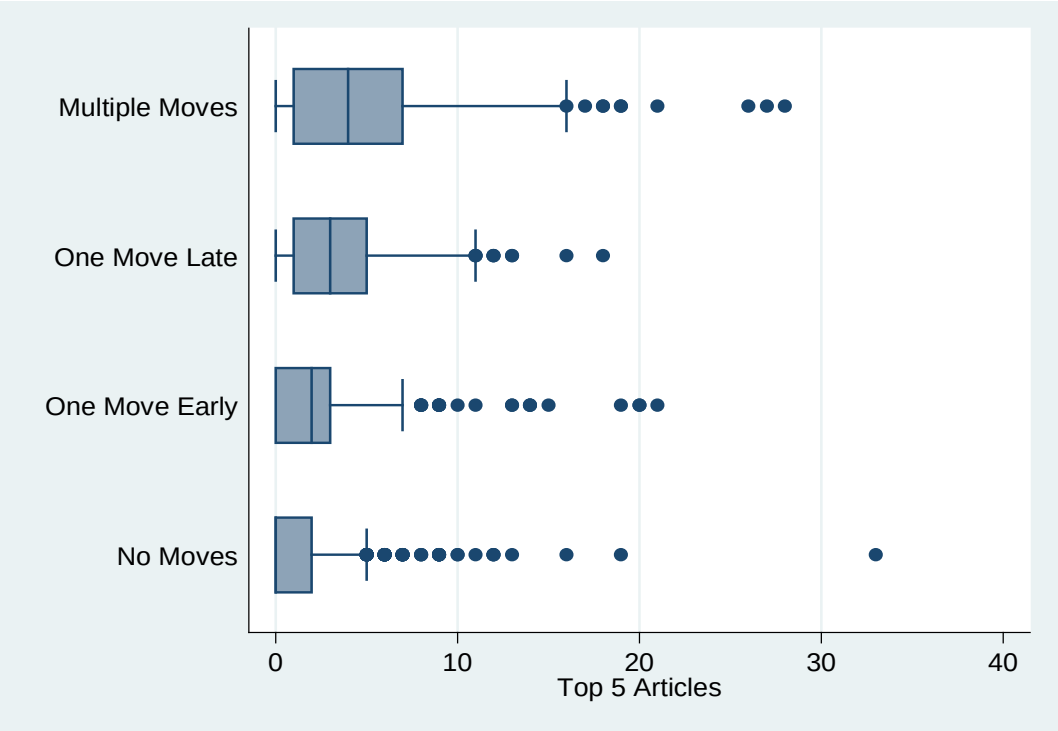

Figure 3a
Boxplot of Lifetime Top 5 Articles by Observed Job Mobility Pattern

Table 2
Log Current Salary Regressions

	Tier 2 (1)	Not Tier 2 (2)	Tier 2 (3)	Not Tier 2 (4)
Multiple Moves	---	---	-.0802	.0887**
	---	---	(.0859)	(.0337)
One Move Early	---	---	.0634	-.0223
	---	---	(.0593)	(.0194)
One Move Late	---	---	-.1332	.0077
	---	---	(.0951)	(.0418)
Seniority	-.0036	-.0233**	-.0116	-.0195**
	(.0094)	(.0045)	(.0099)	(.0047)
Seniority Squared	-.0003	.0004**	-.0002	.0003**
	(.0002)	(.0001)	(.0002)	(.0001)
Experience	.0312**	.0313**	.0392**	.0278**
	(.0077)	(.0048)	(.0086)	(.0051)
Experience Squared	-.0004**	-.0004**	-.0004**	-.0004**
	(.0001)	(.0001)	(.0001)	(.0001)
Top 5 Articles	.0224**	.0261**	.0216**	.0263**
	(.0050)	(.0037)	(.0049)	(.0036)
Top 36 Articles	.0030	.0060**	.0036	.0060**
	(.0034)	(.0030)	(.0033)	(.0030)
Other Articles	.0030	.0030**	.0031	.0028**
	(.0021)	(.0008)	(.0026)	(.0008)
Male	.0384	-.0092	.0531	-.0089
	(.0372)	(.0193)	(.0387)	(.0194)
R-Square	.5347	.4970	.5536	.5071
Observations	145	864	145	864

Notes: Dependent variable is natural log of AY2006 Annual Salary. White consistent standard errors in parentheses. **,* indicate 5% and 10% significance.

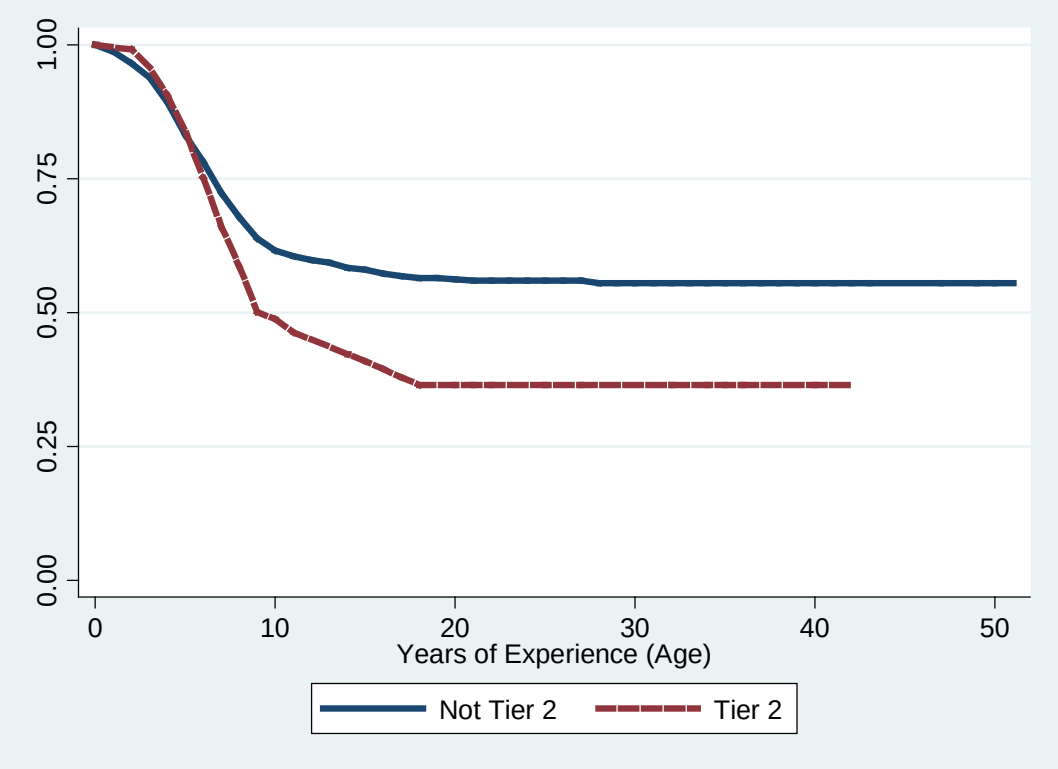

Figure 4a
Estimated Survival-Without-Moving Functions by Years of Experience (Age) and Program Tier

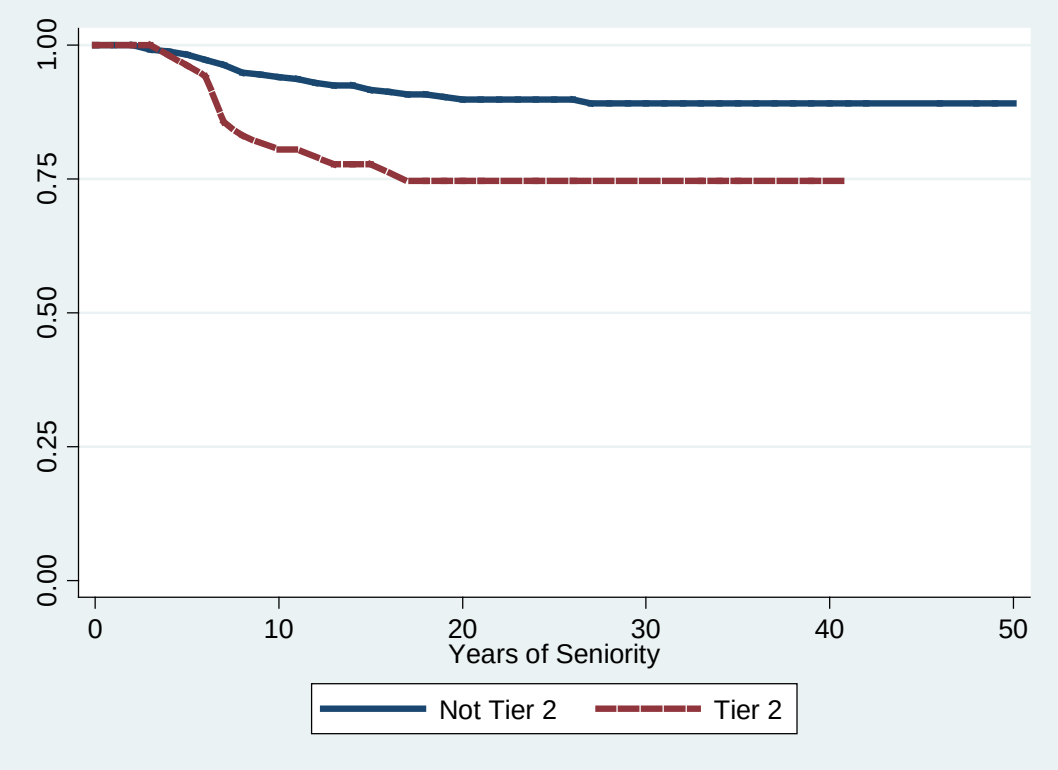

Figure 4b
Estimated Survival-Without-Moving Functions by Years of Seniority and Program Tier

Table 3
Marginal Effects for Hazard Analysis for Not Moving Controlling for Years of Experience (Age) and Number of Prior Moves by Program Tier

	Tier 2 (1)	Not Tier 2 (2)
Experience	-.0018** (.0004)	-.0027** (.0001)
Prior Moves	.0014 (.0039)	.0112** (.0015)
Log Likelihood	-373.59	-2,915.53
Wald Chi-Squared (2)	25.21	285.54

Notes: **,* indicate 5% and 10% significance.