Tenure-Track Contract Helps Self-Selection

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Abstract

Tenure contract is criticized for curbing the incentives for spending effort after obtaining the tenured status. Yet, the best faculty seems to work on a tenure contract, and schools who employ the best faculty seem to prefer to offer tenure-track contract to their new hires. I argue that tenure-track contracts are by construction more attractive to more able freshly minted PhDs, and therefore the observed sorting is rationalizable.

Keywords: tenure, academia, job market, self-selection.

JEL: I23

Machlup (1964) describes four different types of tenure, starting from tenure by law and ending by tenure by courtesy, kindness, timidity or inertia. While some schools do not offer tenure contracts, they act towards their faculty as if they had a tenure contract, and one can easily name an example or two of an underperforming faculty member in a non-tenure school who is certainly not getting fired. The question is therefore: why do schools impose on themselves the burden of the tenure contract if they can instead just act as if they did?

Tenure by contract, unlike tenure by kindness, requires having the tenure-track position. The pathway from tenure-track to tenure is different from the path from the non-tenure-track[1] to entrenchment because the evaluation of the tenure-track contract is independent from the current job market position: for instance, many more people take part in tenure candidate's evaluations, from the high brass of the home university to outside

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[1]In US, these are usually called *adjunct professors* or *lecturers*; in UK, these are called teaching fellows. Hereafter, we will refer to these contracts as lecturers' contracts.

reference writers, who try to establish whether the candidate is above the school's standard. The lecturer, on the other hand, can be replaced by a better-performing outsider; so the decision of whether to keep the lecturer has a *noisier* threshold. I show that a freshly minted PhD of high ability, even risk-neutral, when choosing between the tenure-track contract and the lecturer contract, effectively behaves as a risk-averse individual; whereas the PhD of low ability behaves as a risk-lover, and prefers the lecturer contract.

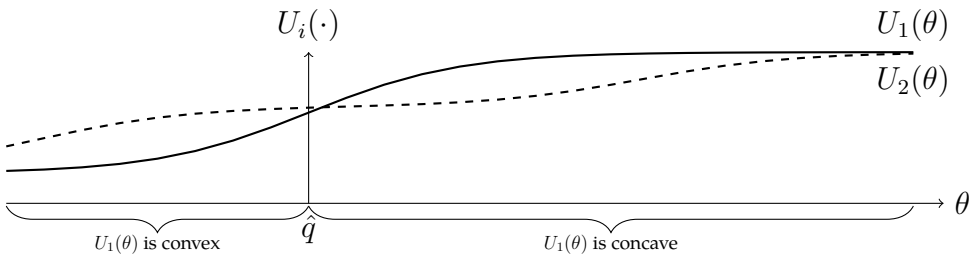
This explanation complements other economic arguments for tenure. For instance, Alchian (1953) reasons that permanent employment might translate into lower salaries, lowering the faculty costs for the university and for the society. Carmichael (1988) argues that non-tenured faculty, not willing to nurture competition, will underreport the ability of talented incomers. McPherson and Winston (1983) argues that narrow specialization of professors in case of free hiring and firing will require too much costly turnover compared to less specialized industry. Brown (1997) reasons that tenure is natural to academic institutions because academics are the resigual claimants of the university's product (see his paper for a historical overview of development of the US education system).[2] All these reasons take the faculty body as fixed and given; my argument is based on the change in the ability distribution of the *incoming* faculty.

These economic reasons complement AAUP's Statement of Principles in 1940, which outlined the tenure system to protect the faculty's academic freedom (Ginsberg (2011) provides some excellent popular reading in the history of academic freedom abuse), but Ceci et al. (2006) empirically questions the efficiency of the tenure system in this regard. Nevertheless, Premeaux (2012) finds universal support for the tenure system in US business schools. Criticism of the tenure system is abundant: others being equal, administrators would like to have more rights to create more incentives for the professors. The contribution of this paper is to show that using tenure-track contract, administrators create incentives for the right job market candidates to manifest themselves.

The Problem of a Freshly Minted PhD

Consider a problem of a freshly graduated PhD (hereafter AP) who chooses between two offers. AP has an innate ability θ, and after 6 years of employment, he will be able to demonstrate a signal of his ability $q = \theta + \varepsilon$, where ε is distributed with a pdf $f(\cdot)$, continuous and positive on $\mathbb{R}$, and a cdf $F(\cdot)$. AP knows his θ, but not his ε. AP chooses between

[2] McPherson and Schapiro (1999) surveys more papers for an interested reader.



NOTE: the density in the picture is *single-peaked*, with peak at 0: $f'(0) = 0$. This allows to make a more precise characterization of the areas discussed in Proposition 1: for $\theta > 2\hat{q} - \underline{q}$, $U_1(\theta) > U_2(\theta)$, and the reverse holds for $\theta < 2\hat{q} - \bar{q}$.

Figure 1: The Utility of the AP

offers from two schools and an outside opportunity, which provides a lifetime utility $\bar{u}$. The time discount factor to compare the payoff today with a payoff in 6 years is δ. Let the utility of being a faculty member during the probation period be γ. AP is risk-neutral.

SCHOOL 1 offers a tenure-track contract. After 6 years, AP will be evaluated: if his signal q is above $\hat{q}$, he will get promoted to a professor position (lifetime utility of which is normalized to 1), and otherwise his only option is the outside opportunity. Being a senior professor is better than the outside opportunity ($\bar{u} < 1$).

Therefore, the utility from choosing the offer from School 1 is

$$U_1(\theta) = \gamma + \delta \overbrace{(1 - F(\hat{q} - \theta))}^{\text{pass tenure review}} + \overbrace{F(\hat{q} - \theta)}^{\text{fail tenure review}} [\delta\bar{u}] = \gamma + \delta - \delta[1 - \bar{u}]F(\hat{q} - \theta).$$

SCHOOL 2 offers a lecturer contract, that does not have a tenure-track confirmation rule. In 6 years, the school might encounter an alternative employee (from a different school, for instance) whose signal of quality is $\tilde{q}$. If $q < \tilde{q}$, the school sacks the AP, and hires another worker instead. The AP then will have to take the outside opportunity. If the alternative employee is not too good ($q \geq \tilde{q}$), the AP gets promoted to a professor position (utility of which is 1), which is not challenged by outsiders because of the entrenchment. The random variable q_2 is distributed on $[\underline{q}, \bar{q}]$.

Therefore, the utility from choosing the offer from School 2 is

$$U_2(\theta) = E_{\tilde{q}} \left[\gamma + \delta \overbrace{(1 - F(\tilde{q} - \theta))}^{\text{AP beats challenger}} + \overbrace{F(\tilde{q} - \theta)}^{\text{Challenger beats AP}} [\delta\bar{u}] \right] = \gamma + \delta - \delta[1 - \bar{u}]E_{\tilde{q}}F(\tilde{q} - \theta).$$

We assume that all monetary payoffs in both schools are identical to be sure that all differences in preferences of the AP are driven by the contract structure.

Proposition 1. *When $E[\tilde{q}] = \hat{q}$, high θ APs prefer School 1, whereas low θ APs prefer school 2.*

Proof. Function $f(x)$ has to increase for small x and decrease for large x to integrate to 1 while being positive to be a proper pdf. Because of this:

- When θ is high enough, function $-F(\hat{q} - \theta)$ is locally concave, and by Jensen's inequality, $-F(\hat{q} - \theta) = -F(E_{\tilde{q}}[\tilde{q}] - \theta) > E_{\tilde{q}} - F(\tilde{q} - \theta)$.
- When θ is low enough, function $-F(\hat{q} - \theta)$ is locally convex, and by Jensen's inequality, $-F(\hat{q} - \theta) = -F(E_{\tilde{q}}[\tilde{q}] - \theta) < E_{\tilde{q}} - F(\tilde{q} - \theta)$.

Picking a θ large (small) enough to be sure that the whole support of $\tilde{q}$, $[\underline{q}, \bar{q}]$, is inside of the concave (convex) zone of $-F(\hat{q} - \theta)$ finishes the proof. □

This Proposition explains why best APs seem to be aiming at getting employed at tenure-track jobs: when they know that their threshold is fixed, it is easier for them to be sure that they will pass the threshold, no matter how high it is. This Proposition supplies intuition why it is extremely hard to move from being a lecturer to being an AP: if one agreed already to be a lecturer while clearly being able to secure a tenure-track position in a similar school, that person has already signalled his belief in his own inferior ability.

Robustness More frequent challenges to the lecturer's contract, as well as additional challenges after 6 years of service, will increase the riskiness of that contract, making it less attractive for able APs. The interim evaluations of the lecturers's ability will be even noisier: indeed, if an interim evaluation is less noisy, the administration can use that interim evaluation signal instead of the signal in 6 years.

The payoff from the lecturer job being identical in all aspects (such as γ and $\bar{u}$) to the payoff from the tenure-track job is needed to make contrast more evident (in fact, in some countries the salary of a lecturer is beyond the administration's control). Obviuously, if a job yields smaller payoff, it's going to be less attractive, and lower demands for tenure, others being equal, will make the job more attractive. If, after failing tenure review, the AP can still try himself as a lecturer, the utility of being on a tenure-track job is weakly higher; if the AP can use both offers sequentially, he is going to use first the one with higher utility from the scenario of Proposition 1.

The assumption that the challengers' abilities come from a bounded support goes against the spirit of the proof of Proposition 1. Indeed, one would naturally assume that the AP who makes a decision must have his ability $\theta \in [\underline{q}, \hat{q}]$. This makes it hard to pick θ high enough so that the whole interval of possible thresholds is in the concave portion of the

utility function. However, after grasping Proposition 1, one can immediately see that if the distribution of challengers' abilities come from a mix of a bounded support distribution ("usual contenders") and an unbounded support distribution ("unusual contenders"), the ordering of $U_1(\theta)$ and $U_2(\theta)$ has to remain the same if the share of the unbounded support distribution is not too large. AP in question might as well be an unusual contender!

Conclusion

One criticism of the tenure system is that it promotes mediocrity, by removing the administrators' ability to fire underperforming professors. Here I argue that tenure-track contracts are more attractive to more able APs, others being equal, thus improving the ability distribution of the incoming faculty. This complements the usual arguments for or against tenure, which mostly concentrate on behavior after obtaining tenure.

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