

Faculty Promotion in Academe: Theory and Evidence from U.S. Economics Departments

JOÃO RICARDO FARIA, PAULO R.A.
LOUREIRO, FRANKLIN G. MIXON, JR.,
ADOLFO SACHSIDA[†]

ABSTRACT

This study develops a vintage model of the tenure and academic promotion process within the American higher education system. In this process, one's professional academic achievements and the characteristics of one's university affiliation work to either increase or reduce the probability of being granted tenure and academic promotion. Aspects related to the academic promotion process developed within our vintage economic model are tested using data from 1,240 individual faculty affiliated with 175 different departments of economics in the United States. Probit estimates presented herein indicate that the number of academic publications is an important consideration for academic promotion across all types of university (institutional) settings, and that different academic generations, one holding PhDs minted prior to 2000 and the other holding PhDs minted after 1999, face different academic promotion practices within their particular institutional affiliations.

JEL Classification: A11, A14, C79.

Keywords: Academic tenure, academic promotions, higher education.

[†] João Ricardo Faria: MPA Program, University of Texas at El Paso, El Paso, TX, USA. Paulo R.A. Loureiro: Department of Economics, University of Brasilia, Brasilia, Brazil. Franklin G. Mixon, Jr.: Center for Economic Education, Columbus State University, 4225 University Avenue, Columbus, GA 31907. E-mail: mixon_franklin@columbusstate.edu. Adolfo Sachsida: IPEA, Brasilia, Brazil. The authors thank two anonymous referees for their comments and helpful suggestions.

1 INTRODUCTION

Faculty tenure, and the academic promotion that often accompanies it, is a topic that has historically been at the center of contentious debate. The arguments in favor of tenure and academic promotion are primarily related to academic freedom, cost-effectiveness and pedagogical quality (McPherson and Winston, 1983; McPherson and Schapiro, 1999; McGee and Block, 2001). According to Carmichael (1988), tenure and academic promotion solves the moral hazard problem of selecting new faculty members, while Faria and Monteiro (2008) show that tenure and academic promotion can be designed to create incentives for scholars to accumulate good academic habits, thus providing a lasting positive impact on a scholar's research productivity.

The idea of tenure and academic promotion also has its critics. Some of these cite anecdotal evidence of its failure to promote academic freedom, such as with the spread of so-called "political correctness" into the academic environment (see Timmons, 1990; Goode, 1991a and 1991b; Scott, 1991). Others, such as Alchian (1977), argue that tenure depends on a lack of competition in the education industry, wherein universities can afford to retain incompetent, yet tenured, professors because universities do not pay the full costs of the tenure system. Even the role of tenure and academic promotion in enhancing pedagogical quality has been criticized, given that favoritism and institutional politics often play a decisive role in the tenure and academic promotion process (Roche, 1969).¹

This study develops a theoretical model encompassing the determinants of the promotion of a tenure-track assistant professor to the rank of associate professor within different types of American universities (e.g., public vs.

¹ Tenure has also been seen as creating incentives for rent seeking. McKenzie (1996) points out that bureaucratic work reduces time for faculty research, so that unproductive scholars have an incentive to increase (unnecessary) bureaucracy in order to reduce variations in productivity within an academic department or unit. Faria (2001) adds that the reputation of an academic position is the main channel through which many individuals obtain private and public consultancies. As such, prospective consultants have an incentive to enter academe.

private, and research vs. non-research). The model addresses whether academic promotion practices are sensitive to gender, race, and/or generation. In order to address these issues from an empirical standpoint, we analyze data from 1,240 individual faculty in 175 departments of economics in the United States. The empirical estimates of the determinants of academic promotion come from a probit model, which estimates the change in the probability of promotion associated with the presence of a determined characteristic. Examples of similar use of probit models are found in Ginther and Kahn (2006), which evaluates gender differences in academic careers using both probit and hazard methodologies, and Pfeifer (2010), which estimates pooled-sample and random-effects probit models using personnel records from a large German company to analyze the determinants of promotions inside the company. Additionally, DeVaro and Samuelson (2004) use a probit model to show that workers are less likely to receive promotions in nonprofit firms than in for-profit firms.

Prior literature has examined the role of a number of factors that explain academic promotion. The so-called “publish or perish” rule is widespread in academe, indicating that publications in peer-reviewed journals are of paramount importance for academic promotion. According to Faria (2002), a university faculty with wider academic networks has greater facility to publish his or her research (see also Manning, 2007; Faria and Goel, 2010).² However, in order to publish, an individual faculty must have time to conduct research; therefore, the time allocation between research, teaching and service also affects the ability to maintain a successful research career, and to achieve the academic promotion that results from such success (see Becker, 1975; Borooah, 1994; Harter, Becker and Watts, 2004; Besancenot, Faria and Vranceanu, 2009).³

² See Ishida (2009) for more on the incentives for academic collaboration. Also, Combes, Linnemer and Visser (2008) examine the role of networks in the hiring of economics professors in France.

³ Johnson and Turner (2009) find that the tenure and academic promotion system generates variation in student-faculty ratios across academic fields, which in turn can affect research productivity and the probability of academic promotion.

Other factors also influence academic promotions. Van der Burg, Siegers and Winter-Ebmer (1998) identify being a full-time faculty member as important for academic promotion. Additional activities, such as fundraising, consulting and administrative appointments can influence academic promotion as well (Sabatier, Carrere and Mangematin, 2006). Conformity with social norms may play a role as well, given that both knowing and playing according to the rules of tenure and academic promotion is essential for professional success. According to Krampen (2008), the majority of German professors know and conform to the rules of academic evaluation that are, on the one hand, quantitative in terms of the number of publications and citations, and are, on the other hand, qualitative, such as scientific originality, engagement and commitment in teaching.

The academic environment can be crucial for academic promotion. For instance, a good department, with a healthy tradition of research and collegiality, will facilitate both research productivity and promotions, while a bad department may destroy careers (see Faria, 1998). Politics may play a crucial role in the academic promotion process as well. Perlmutter (2010a and 2010b) discusses some important issues, including how the psychological make-up of the faculty members in an academic department influences the promotion process. The mix-and-match of different generations, with different academic ranks, of faculty in the same department creates an environment conducive of research, which may facilitate academic promotion (see Carayol and Matt, 2004, for evidence from laboratories). Lastly, outside options increase academic mobility, which also impacts academic promotion (Elliott and Lindley, 2006).

In this study we develop a vintage model of an academic department in order to explore some of the factors that have been identified within the academic literature as having important influences on the academic promotion process. As mentioned previously, these are publications in peer review journals, the length of time to promotion, and other personal and academic qualities that increase (e.g., PhD from a top department) or decrease (e.g., including one's

supervisor's name in one's curriculum vitae) the probability of being awarded an academic promotion. Department characteristics also affect academic promotion, such as a department's size and type (e.g., research-oriented v. teaching-oriented), a department's impatience (time horizon), and whether the department sets relatively arduous tenure and academic promotion requirements or practices, such as publishing in top journals.

The study is organized as follows. The next section explains how the tenure and academic promotion process works in American universities. In section 3, the vintage academic model is presented, while the results and methodology of the empirical tests appear in section 4. Lastly, section 5 provides some concluding remarks.

2 TENURE AND ACADEMIC PROMOTION IN AMERICA

Tenure is a substantial element of the higher education system in the United States. Tenure is a quasi-permanent contract that is, in the American university system, traditionally associated with promotion from the rank of assistant professor to the rank of associate professor. If a tenure-track faculty member is not awarded tenure and academic promotion at a particular university, he or she is typically faced with the prospect of securing alternative employment.

The timeline for promotion from assistant to associate professor generally ranges from five to seven years, depending on state- or university-specific guidelines and regulations. Candidates for tenure and academic promotion are generally evaluated by university peers on the basis of their contributions to teaching, research and service, although the relative weights attached to these three areas of professional responsibility generally vary by department and/or university (see Harter, Becker and Watts, 2011; for a critique see Boyer, 1990; Gray, Diamond and Adam, 1996). Teaching is often evaluated through student and faculty peer evaluations.⁴ Research is often judged on

⁴ In the latter situation, one's departmental colleagues may sit in on class sessions in order to assess teaching style, techniques and interaction between instructor and students.

two dimensions – publications and citations. At the early stage of one’s academic career, the number and quality of publications is often deemed the more important of the two metrics. To facilitate evaluation, many economics departments develop a ranking of academic journals (on the basis of journal quality). Publications in top journals are highly prized, and in research institutions they are typically the most important metric that is considered for merit raises, tenure and academic promotion. This particular metric is valued, because as it rises so does the scholarly reputation of the particular department (American University, 2010). Finally, service is often assessed through committee participation at the department, college and university level, as well as participation in professional associations, working as journal referees and similar activities.⁵

The decision to grant tenure and academic promotion typically requires numerous levels of approval. Generally, the sequence is as follows: (1) A departmental tenure committee evaluates the candidate’s professional dossier, which contains information regarding his or her achievements in terms of teaching, research and service⁶, (2) the departmental committee votes on the candidate’s application, (3) the departmental committee’s recommendation is communicated to a panel of members in their college or to the college’s dean, which/who then decides whether to agree or disagree with the department’s recommendation, and (4) having received the college panel’s (or college dean’s) opinion, the upper-level administrators of the university (e.g., the university’s provost and president) make a definitive decision on whether to grant tenure and academic promotion to the candidate.

The above description fits the case of a candidate being evaluated, as to one’s merits, within his or her own institution. However, university faculty usually retain the option of “testing the academic labor market” by seeking a job offer

⁵ One of the objectives of service is to enhance the university community as a whole.

⁶ The departmental committee may solicit the opinion of external reviewers (e.g., prominent scholars of national or international stature who also work in the candidate’s area of specialization) about the candidate. Departmental tenure committees generally produce a report either in favor or not in favor of the candidate’s application for tenure and academic promotion.

from a competing academic institution. When this occurs, the faculty may be offered a tenured position elsewhere, or a position at the associate professor level. In either case, the faculty candidate can communicate the offer to administrators within his or her institution, in order to enhance his or her bargaining power within that institution.

The academic labor market in the United States is relatively large. In economics, the American Economic Association (AEA) maintains a website that hosts *Job Openings for Economists* (JOE), an electronic publication listing academic and non-academic job openings for economists worldwide.⁷ Of course, a professor's academic mobility is a function of many of the same metrics that influence the probability that one achieves tenure and academic promotion within one's current professional home. Such mobility is often reflected by migration of faculty to and from private (public) universities, or to and from research-oriented (teaching-oriented) universities, so as to increase their salaries and/or academic rank.

The subsequent section of this study, Section 3, provides an economic model of the academic promotion process. It takes into account many of the facets of the tenure and academic promotion process as described above in the current section of the study.

3 THE ECONOMIC MODEL

An academic department seeks a combination of hiring and promotion of new faculty in order to maximize the actual net value of its reputation throughout its existence.⁸ We assume the department hires newly-minted PhDs to the rank of tenure-track assistant professor only.⁹ Here, the term "promotion" refers to promotion from the rank of assistant to associate professor. Tenure-track assistant professors who are denied tenure and academic promotion are

⁷ At one time, *Job Openings for Economists* was a printed periodical.

⁸ Our model assumes an infinite horizon.

⁹ It is implicit that the department does not hire its own newly-minted PhDs in order to avoid so-called "academic inbreeding." Inanc and Tuncer (2011) show that academic inbreeding has a negative impact on scientific effectiveness.

required to secure employment elsewhere.¹⁰ The department's objective function is,

$$\Theta\{P\} = \int_0^{\infty} [R(P(t), A(t), Z(t), X(t)) - C(P(t)) - w\pi(t)] e^{-rt} dt, \quad (1)$$

where $\Theta\{P\}$ is the actual net value of department's reputation, R is the reputation of tenured faculty, P represents tenured faculty, A is the number of articles published in peer-reviewed academic journals, Z summarizes personal and academic attributes – “other variables” that positively impact R – and, lastly, X represents “other variables” that negatively impact R .¹¹ The total costs associated with tenured faculty are described by function C , r captures the academic department's impatience, and $\pi(t)$ is tenure track faculty at time t that are paid a salary of w .

In this formulation, a department hires new faculty as tenure-track members of the department, after earning tenure and academic promotion, become permanent members of the department. The rules associated with tenure and academic promotion are implicitly designed to increase, or at least maintain, the reputation of the department. Hence, the tenure-track period for new faculty is understood as an investment by an academic department in its future reputation. Given that it takes time for a newly-minted PhD, hired as a tenure-track faculty member, to earn tenure and academic promotion, we assume a general distributed lag relationship between the hiring onto tenure track and the awarding of tenure and academic promotion:¹²

$$P(t) = \int_{-\infty}^{t-T} \pi(u)\eta(t-u)du. \quad (2)$$

¹⁰ For more on how these rules may make the department display internal labor market characteristics, see Haeck and Verboven, (2010).

¹¹ For instance, the field of expertise of a given faculty member is a trick variable, where core areas such as macroeconomics and microeconomics are positive attributes, while areas with less prestige, such as history of economic thought, would enter as a negative attribute.

¹² The vintage structure is in line with the life cycle of research productivity (Rauber and Ursprung, 2006). For more, see Hamermesh (1998), Levin and Stephan (1991).

The expression $\eta(t-u)$ is a weighting function governing the rate at which a tenure-track faculty $\pi(u)$ becomes a tenured and promoted faculty. Thus, it captures the tenure and academic promotion system, which is a selection system that allows the department to select, from a pool of tenure-track members, the ones to be tenured and promoted. Although there are various $\eta(t-u)$ that can be assigned to $\pi(u)$, the most common is to assume a simple exponentially declining function¹³, $\eta(t-u) = \sigma e^{-\sigma(t-u)}$. The parameter σ is the rate at which members of a given cohort of tenure-track faculty fail to earn tenure and academic promotion, and therefore have to secure employment elsewhere. In the integral, $t-T$ is the last generation of faculty that was awarded tenure and academic promotion at t . As such, a natural explanation for T is that it represents the time spent as tenure-track faculty.

Substituting $\eta(t-u) = \sigma e^{-\sigma(t-u)}$ we can rewrite (2) as:

$$P(t) = \int_{-\infty}^{t-T} \sigma \pi(u) e^{-\sigma(t-u)} du. \quad (3)$$

Deriving (3) with respect to time yields:

$$\begin{aligned} \dot{P}(t) &= -\sigma \int_{-\infty}^{t-T} \sigma \pi(u) e^{-\sigma(t-u)} du + \left[\sigma \pi(u) e^{-\sigma(t-u)} \right]_{u=-\infty}^{u=t-T} \\ &= \sigma \pi(t-T) e^{-\sigma T} - \sigma P(t) \end{aligned} \quad (4)$$

Note that by rearranging (4) we have:

$$\pi(t-T) = \left[\frac{\dot{P}(t)}{\sigma} + P(t) \right] e^{\sigma T}. \quad (4)$$

Thus:

$$\pi(t) = \left[\frac{\dot{P}(t+T)}{\sigma} + P(t+T) \right] e^{\sigma T}. \quad (5)$$

¹³ A weighting function governs the rate at which a variable expressed as a flow is manifested into stock. Mann (1975) discusses various weighting functions.

Substituting equation (5) for $\pi(t)$ into the department's problem, given by (1), yields:

$$\Theta\{P\} = \int_0^\infty \left[\begin{array}{c} R(P(t), A(t), Z(t), X(t)) - C(P(t)) \\ -w \left[\frac{\dot{P}(t+T)}{\sigma} + P(t+T) \right] e^{\sigma T} \end{array} \right] e^{-rt} dt. \quad (6)$$

But,

$$\int_0^\infty \dot{P}(t+T) e^{-rt} dt = \int_T^\infty \dot{P}(u) e^{-r(u-T)} du = -P(T) + r e^{rT} \int_T^\infty P(u) e^{-ru} du. \quad (7)$$

Also,

$$\int_0^\infty P(t+T) e^{-rt} dt = \int_T^\infty P(u) e^{-r(u-T)} du = e^{rT} \int_T^\infty P(u) e^{-ru} du. \quad (8)$$

Assuming that the only costs are the wage bill, $C(P(t)) = WP(t)$, and using (7) and (8) into (6) we have,

$$\begin{aligned} \Theta\{P\} = & \int_T^\infty \left[R(P(t), A(t), Z(t), X(t)) - WP(t) - w e^{(\sigma+r)T} [r\sigma^{-1} + 1] P(t) \right] e^{-rt} dt \\ & + \int_0^T \left[\begin{array}{c} R(P(t), A(t), Z(t), X(t)) - WP(t) - \\ w e^{(\sigma+r)T} [r\sigma^{-1} + 1] P(t) \end{array} \right] e^{-rt} dt - w e^{\sigma T} P(T) \end{aligned} \quad (9)$$

wherein the last two terms (of equation (9)) are invariant with respect to $P(t)$, $t > 0$. Therefore, maximizing $\Theta\{P\}$ with respect to $P(t)$ yields,

$$R_P(P(t), A(t), Z(t), X(t)) - W - w e^{(\sigma+r)T} [r\sigma^{-1} + 1] = 0. \quad (10)$$

The first order condition (10) determines equilibrium P^* , and unveils the factors that determine tenure and academic promotion, given that by impacting P^* these factors are also impacting a department's decision to grant tenure and academic promotion to tenure-track faculty. In order to better grasp their impact, let us assume, for the sake of simplicity, that the following reputation function, R : $R(P(t), A(t), Z(t), X(t)) = Z / X \cdot P^a A^{1-a}$, where $0 < a < 1$, as a consequence of (10) becomes:

$$\begin{aligned}
 a \frac{Z}{X} P^{a-1} A^{1-a} &= W + we^{(\sigma+r)T} [r\sigma^{-1} + 1] \Rightarrow P^* \\
 &= \left[\frac{a(Z/X)A^{1-a}}{W + we^{(\sigma+r)T}(r\sigma^{-1} + 1)} \right]^{1/(1-a)}. \tag{11}
 \end{aligned}$$

From (11) it is quite clear that more publications in peer-reviewed academic journals, A , increases the probability of being awarded tenure and academic promotion.¹⁴ Personal and academic qualities, such as being male and/or American, or having a PhD degree from a highly-ranked or highly-regarded university, are perceived as positive qualities and are described by Z ; these increase the probability of academic promotion. Negative personal and academic qualities, such as including one’s dissertation supervisor’s name in one’s curriculum vitae, are captured by X ; these decrease the probability of academic promotion.¹⁵ According to equation (11), P^* can be equal to zero if A or Z is equal to zero. This result states that candidates seeking tenure and academic promotion who display a paucity of attributes that enhance a department’s reputation are not bestowed such awards.

In this simplified model, costly faculty are less likely to be awarded tenure and academic promotion. In other words, relatively highly-paid tenure-track faculty are less likely to be awarded tenure and academic promotion within a department that has a relatively small budget (i.e., the impact of w on P^* is negative). Similarly, given that compensation of tenured/highly-ranked faculty account for most of a department’s budget, an increase in W leads to

¹⁴ Here, single-authored and coauthored articles carry the same weight. According to McDowell and Smith (1992), this may bias the academic promotion process. Lastly, citations to one’s prior work can easily be incorporated into the model here. Given that our study focuses on tenure and promotion to associate professor, instead of promotion to full professor, which occurs later in one’s academic career and after enough time has passed to build up a stock of citations, our model does not explicitly account for citations. In the case of tenure and promotion to associate professor, citation stocks are generally small and exhibit little variance.

¹⁵ To summarize, Z captures personal and academic attributes – “other variables” that positively impact R – and X represents “other variables” that negatively impact R . Although these may be continuous variables, they may also be binary variables, as with the example of the inclusion of one’s dissertation supervisor’s name in one’s curriculum vitae, which is often regarded as a signal (or a proxy) of poor (hidden) ability.

a fall in P^* (i.e., there are fewer resources with which to promote tenure-track faculty).¹⁶

The type of academic department under consideration also plays an important role in the tenure and academic promotion process. The two types of academic departments considered in this study – one that is research-focused and another that specializes in teaching – differ mainly in the following attributes: impatience, tenure and academic promotion rules, and length of time to tenure and academic promotion.¹⁷ We assume that a research-oriented department is more impatient, has more stringent tenure and academic promotion rules, and exhibits a longer length of time to tenure and academic promotion than a teaching-focused department.¹⁸ An impatient department, one that aims at achieving a lofty reputation, retains more stringent tenure and academic promotion standards, as seen by the negative impact of r on P^* . More stringent tenure and academic promotion rules, such as requiring tenure-track faculty to publish in the top journals of a given academic field, make it more difficult for tenure-track faculty to earn tenure and academic promotion.¹⁹ This idea is captured by a higher σ having a negative impact on P^* . Lastly, given that the impact of T on P^* is negative, tenure-track faculty in academic departments that require longer periods on

¹⁶ Epstein and Ward (2006) investigate the effect of underpayment on effort in academic publishing. For more, also see Bratsberg, Ragan and Warren (2003). Lastly, given that job mobility is absent from the model, outside employment options, with their attendant competitive salaries, are not taken into account. Evidence from Barbezat and Hughes (2009) shows, however, that job mobility among faculty is generally low and that salaries are not significantly related to the number of academic jobs.

¹⁷ For more on teaching versus research departments, see Faria and Besancenot (2010).

¹⁸ There may be important differences with regard to hiring and promotion between economics departments at top universities, where the incentive may be to hire and retain top academics, and those at lower-ranked institutions, where the incentive may be to avoid competition between individual faculty. Our research-oriented/teaching-focused dichotomy should also capture some of these differences, given that, at least for the U.S., it generally divides departments on the perceived quality spectrum.

¹⁹ Health economists, for example, are often credited (for tenure and academic promotion purposes) for their publications in economics journals only, and not for those outside of economics (Morrissey and Cawley, 2008).

the tenure track face a lower probability of being awarded tenure and academic promotion.

4 DATA AND ECONOMETRIC RESULTS

The ideal type of data to test implications of the theoretical model above are cohort data that follow individual faculty over time, and include faculty who were denied tenure and academic promotion at a particular institution. Unfortunately, the collection of such a sample would be prohibitively difficult, if not impossible. Therefore, in order to explore the facets of the model described above, we collected data from 1,240 individuals working as full-time faculty in 175 departments of economics in the United States.²⁰ The data represent a pool of faculty members classified as assistant professors and associate professors.

Table 1 displays the descriptive statistics of our sample of economics faculty. In all, about 66 (34) percent of the economics faculty in our sample are affiliated with departments in public (private) universities in the United States, while about 35 percent are affiliated with departments in research-oriented universities, as characterized in this study as having a PhD program in economics. The remaining 65 percent of economics faculty in the sample are affiliated with departments in non-research universities.

On average, each department is comprised of 18 economics faculty, with about 53 percent of the department's faculty holding the rank of associate professor. Roughly 26 percent of the economics faculty in the sample earned a PhD from one of the top 25 universities in the United States. Lastly, each professor has published, on average, nine papers, although this average

²⁰ The data sample is a cross-section for 2010, and the list of the 175 departments is available from the authors upon request. The main source of information on the faculty used in this study is the individual's curriculum vitae, which is available online, either on one's personal homepage or one's department's homepage. Lastly, although panel data would provide an avenue for modeling the effects of business cycles on hiring and promotion in academe, given that these two processes are more competitive during recessions than they are during economic booms, data limitations prevent such an analysis at present. In the future, researchers might explore these and perhaps other limitations associated with cross-section analysis.

decreases to about seven published papers for economics faculty affiliated with non-research universities, while it increases to about 11 published papers for economics faculty affiliated with research-oriented universities.²¹

Table 1: Descriptive Statistics [Faculty]*

<i>Variable</i>	<i>General</i>	<i>Non-Research</i>	<i>Research</i>	<i>Private</i>	<i>Public</i>
associate	0.5290 (0.49)	0.5229 (0.49)	0.5344 (0.49)	0.5245 (0.50)	0.5312 (0.49)
size	18.18 (5.18)	16.23 (4.67)	19.93 (4.98)	17.26 (5.75)	18.63 (4.81)
male	0.4024 (0.49)	0.3424 (0.47)	0.4563 (0.49)	0.3529 (0.47)	0.4266 (0.49)
American	0.2895 (0.45)	0.3168 (0.46)	0.2649 (0.44)	0.3210 (0.46)	0.2740 (0.44)
Caucasian	0.2250 (0.41)	0.2350 (0.42)	0.2159 (0.41)	0.25 (0.43)	0.2127 (0.41)
top university	0.2653 (0.44)	0.2112 (0.40)	0.3139 (0.46)	0.3406 (0.47)	0.2283 (0.42)
number of papers	9.03 (16.77)	6.84 (17.11)	11.01 (16.22)	8.18 (14.99)	9.45 (17.57)
top journals	0.1814 (0.38)	0.1073 (0.31)	0.2480 (0.43)	0.1862 (0.38)	0.1791 (0.38)
adviser	0.1056 (0.30)	0.0868 (0.28)	0.1225 (0.32)	0.1078 (0.31)	0.1045 (0.30)
micro	0.2233 (0.41)	0.1925 (0.39)	0.2511 (0.43)	0.2475 (0.43)	0.2115 (0.41)
macro	0.1491 (0.35)	0.1448 (0.35)	0.1531 (0.36)	0.1274 (0.33)	0.1598 (0.36)
econometrics	0.1645 (0.37)	0.1073 (0.31)	0.2159 (0.41)	0.1372 (0.34)	0.1778 (0.38)
<i>n</i>	1,240	587	653	408	832

Notes: *: Values in parenthesis are the standard-deviations.

Again, our research questions are the following: what determines the promotion of a tenure-track assistant professor of economics to the rank of

²¹ About 18 percent of economics faculty who are affiliated with public universities have published at least one paper in a top journal. It is noteworthy that 10.5 percent of all economics faculty in the sample list the name of their dissertation adviser in their curriculum vitae. Also, about 22 percent of the economics faculty in the sample declare microeconomics as their field of expertise, while about 15 (16) percent list macroeconomics (econometrics).

associate professor in different types of institutional settings? And, does the practice regarding academic promotion change with gender, race, and/or generation? In order to investigate the determinants of promotion within economics departments we estimate a probit model, which calculates the change in the probability of academic promotion that is associated with the presence of a determined characteristic. Our dependent variable is a dummy variable which assumes value of 1 if the particular economics faculty is an associate professor, and 0 otherwise. The first set of results discussed herein is presented in Table 2.

It is interesting to note that, as indicated in Table 2, the number of papers published is an important variable in explaining the probability of academic promotion across all types of university settings. In fact, the probit results indicate that research-oriented universities do not appear to give greater weight to the number of publications than do non-research universities. Still, the results in Table 2 suggest that it is more difficult to achieve academic promotion in research universities than in non-research universities.²² In terms of gender, male faculty exhibit a 13 percentage-point greater probability of being promoted to the rank of associate professor than do their female counterparts. This result could have implications for discrimination, which has been shown to potentially exist in the awarding named professorships in academe (Mixon and Trevino, 2005; Gomez-Mejia, Trevino and Mixon, 2009). In terms of nationality, American faculty face a 15 percentage-points greater probability of being awarded academic promotion than their non-American counterparts, while Caucasian faculty face an 11.5 percentage-points advantage over their non-Caucasian counterparts in a particular institution. It is also remarkable that economics faculty who include the name of their dissertation advisor in their curriculum vitae see a substantial reduction – by 23.4 percentage points – in the probability of receiving academic promotion.

²² This result supports the notion discussed above, that there may be more competition among faculty at research-oriented universities, which in the U.S. are generally top-ranked institutions, than there is within teaching-focused universities.

The third column in Table 2 presents the results for non-research universities. One expects a large role for Americans here, given the importance of language skills, which clearly favors native speakers, related to teaching in this type of institutional setting.

Table 2: Probit Results (Dependent Variable: Probability of Academic Promotion)

<i>Variable</i>	<i>General</i>	<i>Non-Research</i>	<i>Research</i>	<i>Private</i>	<i>Public</i>
Research*	-0.1087 (0.001)	-	-	-0.0592 (0.339)	-0.1331 (0.001)
Public*	-0.0027 (0.934)	0.0176 (0.701)	-0.0142 (0.774)	-	-
size	0.0007 (0.813)	0.0056 (0.239)	-0.0034 (0.447)	-0.0032 (0.535)	0.0035 (0.406)
male*	0.1303 (0.000)	0.0211 (0.687)	0.2315 (0.000)	0.1409 (0.028)	0.1222 (0.005)
American*	0.1495 (0.000)	0.0581 (0.288)	0.2520 (0.000)	0.2046 (0.003)	0.1275 (0.008)
Caucasian*	0.1145 (0.006)	0.1592 (0.006)	0.0618 (0.327)	0.0632 (0.395)	0.1364 (0.008)
top university*	0.0543 (0.140)	0.0601 (0.283)	0.0650 (0.193)	0.0651 (0.303)	0.0577 (0.210)
number of papers	0.0327 (0.000)	0.0347 (0.000)	0.0321 (0.000)	0.0312 (0.000)	0.0337 (0.000)
top journals*	0.0693 (0.142)	0.1028 (0.226)	0.0537 (0.346)	0.0612 (0.477)	0.0631 (0.269)
adviser*	-0.2345 (0.000)	-0.2560 (0.003)	-0.2485 (0.000)	-0.1415 (0.137)	-0.2818 (0.000)
micro*	-0.0487 (0.202)	-0.0805 (0.164)	-0.0437 (0.407)	-0.0582 (0.382)	-0.0494 (0.295)
macro*	-0.0099 (0.823)	-0.0069 (0.917)	0.0116 (0.851)	0.0211 (0.805)	-0.0265 (0.617)
econometrics*	-0.0117 (0.783)	-0.0899 (0.237)	0.0119 (0.822)	-0.1403 (0.102)	0.0386 (0.434)
<i>n</i>	1,240	587	653	408	832
LR χ^2	423.2 (0.000)	154.2 (0.000)	286.9 (0.000)	143.1 (0.000)	287.9 (0.000)
Log likelihood	-645.81	-329.14	-307.60	-210.77	-431.09
Pseudo R^2	0.247	0.190	0.318	0.253	0.250

Notes: *: marginal effects. Numbers in parenthesis are the p -values.

The results indicate, however, that there is no promotion probability advantage accruing to native faculty. On the other hand, Caucasian faculty at non-research universities exhibit a greater probability – by 16 percentage points – of being awarded academic promotion than their non-Caucasian counterparts. Turning to the Table 2 results concerning research universities, private universities and public universities, the demographic characteristics relating to American nationality and Caucasian ethnicity continue to exhibit benefits in terms of the probability of being awarded academic promotion, *ceteris paribus*. Lastly, across all of the probit results in Table 2, a number of important determinants of academic promotion stand out. These include (1) the pervasiveness of the “publish or perish” phenomenon across all types of U.S. universities, given that the number of publications is positively related to the probability of earning academic promotion, (2) the unimportance of department size in determining academic promotion for individual economics faculty, (3) the male advantage in the academic promotion process at all types of institutional settings, with the lone exception of non-research universities, where teaching is paramount, (4) the native-born (i.e., American-born) advantage across institutional settings, and (5) the inclusion of one’s dissertation advisor in one’s curriculum vitae, which is, as a signal of ability, negatively related to the probability of achieving academic promotion in economics.²³

Do academic promotion practices vary by generation? Is there a cohort effect in the academic promotion process? Is a faculty who holds a PhD minted before 2000 subject to different promotion practices than those facing faculty who hold PhDs that were minted after 1999? The tests, again using a dependent variable that assumes value 1 for associate professors of economics, and 0 (zero) otherwise, whose results are presented in Tables 3 and 4 address these types of questions.

²³ Other prevailing results presented in Table 2 include the lack of significance of (1) having a PhD from a highly-regarded university, (2) having publications in top-rated journal outlets, and (3) having one particular field of expertise or another.

The probit results presented in Table 3 indicate that, for economics faculty whose PhD degrees were minted before 2000, affiliation with a research-oriented university in the U.S. offers a more difficult path to academic promotion.

Table 3: Probit Results (Dependent Variable: Probability of Academic Promotion; Sample Includes Faculty with PhDs Minted before 2000 only).

<i>Variable</i>	<i>General</i>	<i>Non-Research</i>	<i>Research</i>	<i>Private</i>	<i>Public</i>
Research*	-0.0669 (0.034)	-	-	-0.0018 (0.976)	-0.0862 (0.016)
Public*	0.0223 (0.465)	0.0449 (0.287)	-0.0006 (0.987)	-	-
size	0.0009 (0.739)	0.0033 (0.435)	-0.0019 (0.607)	-0.0028 (0.585)	0.0023 (0.518)
male*	0.1005 (0.002)	-0.0020 (0.966)	0.1919 (0.000)	0.1278 (0.035)	0.0825 (0.029)
American*	0.0652 (0.062)	0.0413 (0.401)	0.0923 (0.041)	0.1643 (0.010)	0.0224 (0.591)
Caucasian*	0.0683 (0.066)	0.0863 (0.101)	0.0457 (0.343)	0.0079 (0.915)	0.0840 (0.045)
top university*	0.1126 (0.001)	0.0841 (0.106)	0.1163 (0.004)	0.1650 (0.008)	0.0957 (0.015)
number of papers	0.0175 (0.000)	0.0247 (0.000)	0.0135 (0.000)	0.0176 (0.000)	0.0171 (0.000)
top journals*	0.0821 (0.067)	0.0932 (0.274)	0.0714 (0.138)	0.0429 (0.633)	0.0946 (0.064)
adviser*	-0.0487 (0.531)	0.0737 (0.647)	-0.0770 (0.343)	0.0144 (0.917)	-0.0824 (0.384)
micro*	0.0108 (0.765)	0.0199 (0.718)	-0.0145 (0.754)	-0.0721 (0.305)	0.0390 (0.346)
macro*	0.0618 (0.138)	0.0282 (0.666)	0.0849 (0.084)	0.0730 (0.371)	0.0556 (0.241)
econometric*	0.0372 (0.408)	0.0335 (0.688)	0.0126 (0.802)	-0.1163 (0.286)	0.0727 (0.115)
<i>n</i>	828	411	417	279	549
LR χ^2	227.6 (0.000)	100.9 (0.000)	144.4 (0.000)	82.7 (0.000)	154.6 (0.000)
Log likelihood	-396.62	-212.49	-173.33	-134.78	-256.59
Pseudo R^2	0.223	0.192	0.294	0.235	0.232

Notes: *: marginal effects. Numbers in parenthesis are *p*-values.

Other Table 3 results are similar to those provided in Table 2, such as the fact that the size of one's economics department is not a significant determinant of the probability of being awarded academic promotion. Also, male faculty exhibit a higher probability of earning academic promotion across all institutional settings, with the exception of non-research universities. Native-born (U.S.-born) faculty are more likely to be granted academic promotion when affiliated with private universities than are their non-American counterparts, while Caucasian faculty exhibit higher probabilities of receiving academic promotion at both non-research and public universities than do their non-Caucasian counterparts within the department.

Interestingly, among the cohort of economics faculty holding a PhD minted before 2000, holding a PhD from a top U.S. university increases the probability of academic promotion across all institution types. For research institutions, the marginal effect of holding a PhD from a top U.S. university is greater than that of a having paper published in a highly-regarded journal. For private universities, the marginal effect of holding a PhD from a top U.S. university is almost four times greater than that from having a paper published in a highly-regarded journal. As the results in Table 3 indicate, the publish or perish practice, as exhibited by a positive relationship between the number of publications and the probability of achieving academic promotion, holds across all institutional settings for the cohort of economics faculty who hold PhDs minted before 2000. Publishing in top journals, however, is a significant determinant of the probability of academic promotion for public universities only across this particular cohort. Lastly, neither inclusion of one's dissertation advisor's name in one's curriculum vitae nor one's particular field of expertise significantly impacts the probability of academic promotion within the cohort of economics faculty who hold PhDs minted during the pre-2000 era. The results regarding determinants of academic promotion for economics faculty holding PhD degrees minted after 1999 are presented in Table 4. There, the following general conclusions are reached: (1) the research/non-research institutional setting dichotomy does not play a significant role in explaining variations in the probability of achieving

academic promotion across our sample of university economists, (2) neither one's gender, nor the size of one's economics department is important in the

Table 4: Probit Results (Dependent Variable: Probability of Academic Promotion; Sample Includes Faculty with PhDs Minted after 1999 only).

<i>Variable</i>	<i>General</i>	<i>Non-Research</i>	<i>Research</i>	<i>Private</i>	<i>Public</i>
Research*	-0.0624 (0.148)	-	-	-0.0843 (0.315)	-0.0708 (0.173)
Public*	-0.0386 (0.388)	-0.0117 (0.855)	-0.0311 (0.582)	-	-
size	-0.0016 (0.704)	0.0066 (0.331)	-0.0073 (0.151)	-0.0017 (0.812)	0.0006 (0.914)
male*	0.0710 (0.129)	0.0254 (0.722)	0.0411 (0.463)	0.0706 (0.459)	0.0795 (0.148)
American*	0.0744 (0.230)	-0.0396 (0.606)	0.2037 (0.052)	-0.0131 (0.911)	0.1314 (0.095)
Caucasian*	0.1192 (0.071)	0.1279 (0.170)	0.0719 (0.383)	0.1757 (0.171)	0.0947 (0.240)
top university*	-0.0249 (0.576)	0.0179 (0.802)	-0.0302 (0.570)	-0.0882 (0.277)	0.0058 (0.918)
number of papers	0.0359 (0.000)	0.0264 (0.000)	0.0401 (0.000)	0.0424 (0.000)	0.0339 (0.000)
top journals*	0.0394 (0.485)	0.2174 (0.083)	0.0135 (0.813)	0.0349 (0.766)	0.0484 (0.479)
adviser*	-0.0121 (0.794)	-0.0113 (0.873)	-0.0652 (0.204)	0.0048 (0.957)	-0.0329 (0.552)
micro*	-0.0209 (0.633)	-0.1543 (0.025)	0.0732 (0.184)	0.0588 (0.475)	-0.0614 (0.237)
macro*	-0.0290 (0.566)	-0.0023 (0.975)	-0.0590 (0.302)	-0.0199 (0.864)	-0.0364 (0.521)
econometric*	0.0645 (0.165)	-0.0132 (0.865)	0.0789 (0.127)	0.0571 (0.527)	0.0768 (0.166)
<i>n</i>	412	176	236	129	283
LR χ^2	111.4 (0.000)	33.3 (0.001)	103.1 (0.000)	43.9 (0.000)	71.9 (0.000)
Log likelihood	-149.87	-71.13	-66.26	-42.87	-104.79
Pseudo R^2	0.271	0.190	0.438	0.339	0.256

Notes: *: marginal effects. Numbers in parenthesis are p -values.

determination of academic promotion, (3) U.S.-born faculty display academic promotion advantages over their non-native counterparts in both research and

public institutions, (4) being neither a Caucasian faculty nor a faculty who holds a PhD from top U.S. university significantly impacts one's probability of garnering academic promotion, and (5) generating greater numbers in terms of publications offers, as found previously, a significant advantage in the academic promotion process across all types of institutional settings. The latter effect is about twice as large as that for faculty whose PhD was minted before 2000, while penultimate effect, when compared to its counterpart from the pre-2000 cohort, suggests that consideration of the quality of one's degree in the academic promotion process has lessened over time. Next, it also interesting to note that for this more recent cohort of academic economists (i.e., those holding PhDs minted after 1999), specializing in microeconomics reduces the probability of academic promotion by 15.4 percentage points, provided that one is affiliated with a non-research university, *ceteris paribus*. Lastly, publication in top journals is statistically significant in terms of promotion for this cohort of faculty in non-research universities only, while inclusion of one's dissertation advisor's name in one's curriculum vitae is not significantly related to one's probability of achieving academic promotion.

5 CONCLUDING REMARKS

This study develops a vintage model of the tenure and academic promotion process within the American higher education system. In this process, publication in peer-reviewed journals, the length of time to tenure/academic promotion, personal and other academic qualities either increase or reduce the probability of being granted tenure and academic promotion. The characteristics of one's academic department are also shown to affect the tenure and academic promotion process in the United States. These include familiar metrics, such as the department's size and type (i.e., research-oriented or non-research), the department's impatience, and whether it sets more stringent rules for tenure and academic promotion, such as the expectation that faculty candidates publish in top-ranked academic journals.

Aspects related to the academic promotion process developed with our vintage economic model are tested using data from 1,240 individual faculty affiliated with 175 different departments of economics in the United States. Probit estimates presented herein indicate that the number of academic publications is an important consideration for academic promotion across all types of university (institutional) settings. Additionally, male faculty exhibit higher probabilities of achieving academic promotion than do female faculty, while Caucasian faculty exhibit a similar advantage over their non-Caucasian counterparts. The empirical results indicate that different academic generations or cohorts, one holding PhDs minted prior to the year 2000 and the other holding PhDs minted after the year 1999, face different academic promotion practices within their particular institutional affiliations. Future research on this subject might endeavor to explore various measures of department openness, such as the share of foreign faculty in the particular department. Inclusion of such measures in the empirical format may allow researchers to draw further conclusions from the economic model.

REFERENCES

- American University 2010. "Criteria for tenure and promotion," Department of Economics, www.american.edu/provost/academicaffairs/upload/ECON_tenure_and_promotion.pdf.
- Alchian, A. 1977. "Private property and the relative cost of tenure," in *Economic Forces at Work*, Indianapolis, IN: Liberty Fund.
- Barbezat, D.A., and J.W. Hughes 2001. "The effect of job mobility on academic salaries," *Contemporary Economic Policy* 19: 409-423.
- Becker, W.E., Jr. 1975. "The university professor as a utility maximizer and producer of learning, research and income," *Journal of Human Resources* 10: 107-115.
- Besancenot, D., J.R. Faria, and R. Vranceanu 2009. "Why business schools do so much research: A signaling explanation," *Research Policy* 38: 1093-1101.

- Bratsberg, B., J.F. Ragan, Jr. and J.T. Warren 2003. "Negative returns to seniority: New evidence in academic markets," *Industrial and Labor Relations Review* 56: 306-323.
- Borooah, V.K. 1994. "Modelling institutional behavior: A microeconomics analysis of university management," *Public Choice* 81: 101-124.
- Boyer, E. 1990. *Scholarship Reconsidered: Priorities of the Professoriate*. Princeton: Carnegie Foundation for the Advancement of Teaching.
- Carayol, N. and M. Mireille 2004. "Does research organization influence academic production? Laboratory level evidence from a large European university," *Research Policy* 33: 1081-1102.
- Carmichael, H. 1988. "Incentives in academics: Why is there tenure?" *Journal of Political Economy* 96: 453-472.
- Combes, P.P., L. Linnemer and M. Visser 2008. "Publish or peer-rich? The role of skills and networks in hiring economics professors," *Labour Economics* 15: 423-441.
- DeVaro, J. and D. Samuelson 2004. "Why are promotions less likely in nonprofit firms?" Unpublished Manuscript.
- Elliott, R.J.R. and J. Lindley 2006. "Skill specificity and labour mobility: Occupational and sectoral dimensions," *Manchester School* 74: 389-413.
- Epstein, G.S. and M.E. Ward 2006. "Perceived income, promotion and incentive effects," *International Journal of Manpower* 27: 104-25.
- Faria, J.R. 1998. "The economics of witchcraft and the big eye effect," *Kyklos* 51: 537-546.
- Faria, J.R. 2001. "Rent seeking in academia: The consultancy disease," *American Economist* 45: 69-74
- Faria, J.R. 2002. "Scientific, business and political networks in academia," *Research in Economics* 56: 187-198.

- Faria, J.R. and D. Besancenot 2010. "Good research and bad teaching? A business school tale," *Research in Economics* 64: 67-72.
- Faria, J.R. and R. Goel 2010. "Returns to networking in academia," *Netnomics* 11: 103-117.
- Faria, J.R. and G. Monteiro 2008. "The tenure game: Building up academic habits," *Japanese Economic Review* 59: 370-380.
- Ginther, D.K. and K.J. Hayes 2003. "Gender differences in salary and promotion for faculty in the humanities 1977-1995," *Journal of Human Resources* 38: 34-73.
- Gomez-Mejia, L., L.J. Trevino and F.G. Mixon, Jr. 2009. "Winning the tournament for named professorships in management," *International Journal of Human Resource Management* 20: 1843-1863.
- Ginther, D.K. and S. Kahn 2006. "Does science promote women? Evidence from academia 1973-2001," Unpublished Manuscript.
- Goode, S. 1991a. "All opinions welcome – except the wrong ones," *Insight*, April 22, 8-17.
- Goode, S. 1991b. "Author affirms campus hypocrisy," *Insight*, April 22, 18-19.
- Gray, P., R. Diamond, and B. Adam 1996. "A National study on the relative importance of research and undergraduate teaching at colleges and universities," Center for Instructional Development, Syracuse University.
- Haeck, C. and F. Verboven 2010. "The internal economics of a university – Evidence from personnel data," Unpublished Manuscript.
- Hamermesh, D. 1998. "Aging and productivity among economists," *Review of Economics and Statistics* 80: 154-156.
- Harter, C.L., W.E. Becker and M. Watts 2004. "Changing incentives and time allocations for academic economists: Results from 1995 and 2000 National Surveys," *Journal of Economic Education* 35: 89-97.

- Harter, C.L., W.E. Becker and M. Watts 2011. "Time allocation and reward structures for U.S. academic economists from 1995-2005: Evidence from three national surveys," *International Review of Economics Education* 10: 6-27.
- Inanc, O. and O. Tuncer 2011. "The effect of academic inbreeding on scientific effectiveness," *Scientometrics* 88: 885-898.
- Ishida, J. 2009. "Incentives in academics: Collaboration under weak complementarities," *Labour Economics* 16: 215-223.
- Krampen, G. 2008. "The evaluation of university departments and their scientists: Some general considerations with reference to exemplary bibliometric publication and citation analyses for a Department of Psychology," *Scientometrics* 76: 3-21.
- Levin, S. and P. Stephan 1991. "Research productivity over the life cycle: evidence for academic scientists," *American Economic Review* 81: 114-132.
- Long, R., A. Crawford, M. White, and K. Davis 2009. "Determinants of faculty research productivity in information systems: An empirical analysis of the impact of academic origin and academic affiliation," *Scientometrics* 78: 231-260.
- Mann, D.H. 1975. "Optimal theoretic advertising stock models: A generalization incorporating the effects of delayed response from promotional expenditure," *Management Science* 21: 823-832.
- Manning, C. 2007. "Writing for publication to ensure tenure and promotion for real estate faculty," *Journal of Real Estate Literature* 15: 3-35.
- McDowell, J.M., and J.K. Smith 1992. "The effect of gender-sorting on propensity to coauthor: Implications for academic promotion," *Economic Inquiry* 30: 68-82
- McDowell, J.M.; Singell, L.D., Jr., and Ziliak, J.P. 2001. "Gender and Promotion in the Economics Profession," *Industrial and Labor Relations Review* 54: 224-244.

- McGee, R. and W. Block 2001. "Academic tenure: An economic critique," Unpublished Manuscript.
- McKenzie, R. 1996. "In defense of academic tenure," *Journal of Institutional and Theoretical Economics* 152: 325-341.
- McPherson, M. and G. Winston 1983. "The economics of academic tenure: A relational perspective," *Journal of Economic Behavior and Organization* 4: 163-184.
- McPherson, M. and M. Schapiro 1999. "Tenure issues in higher education," *Journal of Economic Perspectives* 13: 85-98.
- Mixon, F.G., Jr. and L.J. Trevino 2005. "Is there gender discrimination in named professorships? An econometric analysis of economics departments in the U.S. South," *Applied Economics* 37: 849-854.
- Morrisey, M.A., and J. Cawley 2008. "The production of published research by U.S. academic health economists," *International Journal of Health Care Finance and Economics* 8: 87-111.
- Perlmutter, D.D. (2010a) Pick your battles... but how? *The Chronicle of Higher Education*, September 19th, <http://chronicle.com/article/Pick-Your-Battles-but-How-/124526>.
- Perlmutter, D.D. 2010b. "Spotting your enemies," *The Chronicle of Higher Education*, November 7th, <http://chronicle.com/article/Spotting-Your-Faculty-Enemies/125289/>.
- Pfeifer, C. 2010. "Determinants of promotions in an internal labour market," *Schmalenbach Business Review* 62: 342-358.
- Rauber, M. and H. Ursprung 2006. "Evaluation of researchers: A life cycle analysis of German academic economists," Unpublished Manuscript.
- Roche, C. 1969. *Education in America*, Washington, D.C.: Foundation for Economic Education.

- Sabatier, M., M. Carrere and V. Mangematin 2006. "Profiles of academic activities and careers: Does gender matter? An analysis based on French life scientist c.v.s," *Journal of Technology Transfer* 31: 311-24.
- Scott, J. W. 1991. "The campaign against political correctness: What's really at stake?" *Change* 23: 30-43.
- Timmons, B. 1990. "Fraudulent 'diversity,'" *Newsweek*, November 12, 116-118.
- van der Burg, Brigitte, J. Siegers and R. Winter-Ebmer 1998. "Gender and promotion in the academic labour market," *Labour* 12: 701-13.
- Ward, M.E. 2001. "Gender and promotion in the academic profession," *Scottish Journal of Political Economy* 48: 283-302.