Congratulations or Condolences? The Role of Human Capital in the Cultivation of a University Administrator

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Abstract

Administrative skill is essential to organizational effectiveness. Yet, few studies have examined how human capital investments over a career affect selection into administration. We use panel data for economists to estimate the probability of choosing administration over a pure academic track. The results show that, while research-specific human capital reduces the probability of becoming an administrator, general human capital increases it. There are also inferior administrative opportunities for women that have not improved over time and variation in the role of human capital according to institutional research mission. Thus, our results suggest academic leaders are not merely born, but cultivated.

I. Introduction

Although administrators in higher education play an essential role in the success or failure of one of the nation's oldest, largest and most important non-profit sectors, academics have historically perceived a move into administration as a backhanded promotion (e.g., Clotfelter and Rothschild, 1993; Ehrenberg, 1999) In particular, while there has been recognition that successful administrators are likely to have desirable innate and learned leadership qualities (e.g., Kim, 2002; Rainey, 2003), there has oft been the suspicion that administration is the career path followed by academics whose research opportunities are relatively limited (e.g., Siegfried, 1997).

Nonetheless, prior research has not focused on personal or career attributes of administrators, but instead has focused on explaining gender differences in administrative compensation (e.g., Pfeffer & Davis-Blake, 1987), the effects of salary dispersion on turnover, job satisfaction and productivity in administrative positions (e.g., Pfeffer & Davis-Blake, 1992; Pfeffer & Langton, 1993), and the effects of resource-dependence relationships on administrative differentiation (e.g., Tolbert, 1985), administrative intensity (e.g., Gander, 1999), and administrative costs (e.g., Leslie & Rhoades, 1995; Gumport & Pusser, 1995) at academic institutions. Likewise, research on internal academic labor markets has sought to explain differences in gender representation across institutions and academic disciplines (e.g., Tolbert & Oberfield, 1991; Ornstein & Stewart, 1996; Kulis, Sicotte & Collins, 2002) and how these differences affect variation in faculty salaries and institutional resource allocations across disciplines and academic departments (e.g., Bellas, 1994; Bellas, 1997; Volk, Slaughter & Thomas, 2001).

This paper extends the prior research by using uniquely detailed data on the career of academic economists to examine whether the career development of academics who

become administrators differs systematically from their colleagues who remain in the purely academic track. Our analysis provides some of the first formal evidence that general versus research-specific human capital investments facilitate selection into administration, which is broadly consistent with findings for managers in other occupations (Kolpin and Singell, 1993; Singell, 1991).

Organizational theorists have long recognized the essential role of administrators in enabling public and non-profit organizations to effectively carry out their public service missions (e.g., Whetten & Cameron, 1985; Stevens & Williams, 1987; Hennessey, 1998; Brudney, Hebert, and Wright, 1999; Heck, Johnsrud & Rosser, 2000; Reid, Miller & Kerr, 2004; Wagenaar, 2004). However, academia provides a particularly useful institutional setting to study the choice of an administrative career path versus a well-defined purely academic alternative career choice (e.g., Cameron, 1978; Sagaria, 1985; Jones, 1987). In particular, U.S. universities generally share a long-standing, common internal hierarchical structure and easily identifiable administrative positions that make comparisons across institutions more straightforward than in most public-sector or private-sector industries (e.g., Winston, 1999). Moreover, unlike their private sector counterparts, the relative reputation of these institutions is highly stable over time such that comparisons over the course of a particular academic's career or between two academics at the same point in their careers but originating from different cohorts remain valid over a long span of time.

Focusing on academic economists also yields particular advantages for a study of the administrative career choice. Specifically, economists employed in academia perform a relatively homogeneous set of job tasks (teaching, research and service), produce readily observable measures of output (published journal articles) and face promotion

standards that are directly related to observed output (Broder, 1993; Buchmueller, Dominitz and Hansen, 1999; McDowell, Singell, and Stater, 2006). Furthermore, economists are disproportionately represented in higher levels of academic administration such as the office of college president (e.g., Siegfried, 1997) and possess economic reasoning skills that have been postulated to contribute to administrative skills (Ehrenberg, 1999). It follows that analyzing administration in the economics profession can potentially provide insights on the ingredients of leadership, particularly in the context of public and non-profit organizations.

We develop a random-utility model that provides the context for a probit and random-effects probit specification of the decision between administration and the pure academic track that is conditioned on an academic's training, career background, and academic performance. The empirical analysis makes use of uniquely detailed panel data on American Economic Association (AEA) members collected from AEA directories published in three different decades to analyze the personal and organizational characteristics explaining the likelihood that an economist is an administrator. Our findings indicate that research-specific human capital investments tend to reduce the probability of becoming an administrator, but also show that some academic attributes and tasks provide general human capital that facilitates the choice of administration. Moreover, we find evidence that female economists are less likely to become administrators than their comparable male colleagues with limited evidence of improving opportunities for women in administration over the three decades ending in the 1990s.

We conduct several sensitivity tests to check the robustness of our results. Specifically, separate estimates by Tier 1 and non-Tier 1 Carnegie research classifications reveal that the role of human capital in the economist's choice of administration differs

with the research-orientation of the institution. We also investigate the link between publishing productivity at the beginning of a ten-year window and the likelihood of holding an administrative position at the end of the window, which confirms that research-specific productivity reduces the likelihood of selecting an administrative job. Thus, overall the results suggest that economists who self-select into administration have made general, as opposed to research-specific, human capital investments over the course of their career.

The remainder of this paper is organized as follows. Section II outlines our empirical methodology using the data described in Section III. Section IV presents the empirical results of our standard probit and random effects probit models, for the full sample as well as disaggregated by gender and by research tier. Section V concludes.

II. Empirical Methodology

We adopt a random utility approach where an economist becomes an administrator if the utility of undertaking this activity exceeds the utility of the next-best alternative use of the economist's time and resources. Thus, suppose the utility academic *i* receives from an administrative or non-administrative faculty assignment at time *t* (U_{it}^{A} or U_{it}^{F}) is a function of a vector of observable personal attributes (x_{it}^{A} or x_{it}^{F}) and a random error term (ε_{it}^{A} or ε_{it}^{F}):

$$U_{it}^{A} = \beta^{A} x_{it}^{A} + \varepsilon_{it}^{A} \tag{2.1}$$

$$U_{it}^{F} = \beta^{F} x_{it}^{F} + \varepsilon_{it}^{F} \tag{2.2}$$

where β^{A} and β^{F} are vectors of coefficients. For example, greater experience may affect an academic's utility of both administrative and non-administrative assignments, whereas

research productivity may (directly) affect only the utility of non-administrative work. The economist becomes an administrator if $U_{it}^{A} > U_{it}^{F}$, which can be expressed as:

$$(\beta^{A} x_{it}^{A} - \beta^{F} x_{it}^{F}) + (\varepsilon_{it}^{A} - \varepsilon_{it}^{F}) > 0 \tag{2.3}$$

or, more simply:

$$\beta x_{it} + \varepsilon_{it} > 0 \tag{2.4}$$

An individual's utility over administrative and non-administrative activities is likely to depend on unobservable attributes consisting of both individual-specific skills such as innate leadership qualities, λ_i, and idiosyncratic components such as shocks to research output, η_{it}. Thus, the error term ε_{it} from (2.4) can be decomposed as $\varepsilon_{it} = \lambda_i + \eta_{it}$. Obtaining an estimating equation from (2.4) therefore requires distributional assumptions for both λ_i and η_{it}. Specifically, suppose λ_i and η_{it} follow normal distributions with zero means and variances σ_{λ}^{2} and σ_{η}^{2}, respectively.

It is also necessary to make assumptions concerning the correlation between the unobserved heterogeneity λ_i and the observed covariates x_{it}. At one extreme lies the assumption that λ_i is perfectly correlated with the variables in x_{it}; in other words, there is no unobserved person-specific error component beyond the information contained in x_{it}. In this case, (2.4) is estimated with a standard probit model applied to the stacked cross-section of observations over time:

$$\Pr[A_{it} = 1] = \Phi(x_{it}\beta) \tag{2.5}$$

where A_{it} is a dummy variable that equals 1 if economist i is an administrator at time t and Φ is the standard normal cumulative distribution function.

At the other extreme is the assumption that λ_i is perfectly uncorrelated with the variables in x_{it}; in other words, there is an exogenous unobserved person-specific error component. In this case, (2.4) can be estimated with a random effects probit model:

$$\Pr[A_{it} = 1] = \Phi(x_{it}\beta + \lambda_i) \tag{2.6}$$

Since these alternative assumptions represent opposite extremes, the resulting estimates can be interpreted as upper and lower bounds for the true effects. Generally, the random effects estimates are smaller in magnitude than the pooled estimates because they are derived under the assumption of no influence from the person-specific error component. We present and discuss the results of both specifications for comparison[1].

The utility of administrative work, relative to non-administrative alternatives, also depends on observable characteristics captured by the vector x_{it} in equations (2.4 – 2.6). These variables can be categorized into human capital measures, demographic and sociological factors, job-related attributes, labor market conditions and time, as discussed in more detail in the next section of the paper.

Among the human capital measures is publishing productivity. However, actual productivity is likely to be endogenous with respect to administrator status. Administrators have less time to devote to research and those with relatively low tastes for research may be more likely to pursue administrative work. Therefore, we do not include actual publication measures in our baseline models. Instead, the base specifications indirectly control for productivity with variables describing characteristics of an economist's PhD institution and his/her primary field of research. However, we

[1] An intermediate assumption between these two extremes is that the heterogeneity has a nonzero but imperfect correlation with the covariates (a fixed effects probit model). However, fixed-effects estimation primarily exploits within-person variation, which entails the need to observe the same economist as both an administrator and non-administrator. Relatively few economists in our sample have served both roles.

also subsequently introduce an approach that examines the sensitivity of the results to the inclusion of direct productivity measures.

III. Data and Descriptive Statistics

3.1 Data

The data are primarily drawn from the 1964, 1974, 1985, 1989, 1993 and 1997 AEA directories, where the sample includes PhD economists who work in an academic job located in the United States. The data consist of (approximately) a 25-percent random sample of male economists appearing in each cross-section year as well as all female economists who had a PhD and were working in a tenure-track academic job located in the United States in any of the directory years.[2] We have deleted from the original AEA membership lists those economists working in private industry, government or non-profit jobs, as our focus in this paper is on the determinants of academic administrator status. Our final sample thus includes 12,715 economist-year observations. These data provide a uniquely detailed set of contemporaneous attributes of AEA members, including their current job placement, professorial experience, and fields of specialization, but provide only limited information regarding past career history other than their degree-granting institution.

The focus of our analysis is on whether, in a particular directory year, each economist in the sample is observed to be an administrator. Thus, we construct a binary variable that equals one if an economist holds the position of department chair, research

[2]An initial 10 percent random sample was taken from each cross-section. However, each sampled observation was followed forward and backward in time and included in the sample if found in other directories. This sampling procedure yielded approximately a 25 percent random sample from each directory.

or service institute director, college or school dean, or university president[3]. We adopt this inclusive definition of administration in order to develop a broad understanding of the attributes that facilitate selection into university administration. However, the results are generally not sensitive to narrowing the definition of administration to department-level service, largely because chairs and directors comprise 67.6 percent of the administrators in the sample. In particular, unreported specifications that exclude university-level administrators such as deans, provosts, and presidents yield qualitatively similar results[4]. In addition, ordered probit models that incorporate the sequential nature of the progression to higher levels of administration (e.g., from chair to dean to president) also produce similar results. Thus, in the interests of brevity, the remaining analysis focuses on a probit model of the broader concept of administrative choice.

The data contain several categories of explanatory variables can be classified as human-capital, demographic and sociological, job-specific, labor market, and time-specific controls. Human capital controls include age at the time of PhD and experience in the economics profession. Age at PhD serves as a proxy for innate drive or career orientation, where this measure is expected to be inversely related to an economist's research productivity. Experience is included to capture the increasing probability of assuming a leadership role as one accumulates general and institution-specific human capital, where a quadratic in experience is included to capture the possibility of a depreciating effect.

[3] Chancellors and provosts are included in the same category as presidents because only a small percentage of academics in our sample hold any of these positions. Furthermore, these appointments represent the highest ranks of academic administration and, therefore, often entail similar responsibilities.

[4] Specifications that include both department and university-level administrators exhibit a positive but diminishing effect of experience that is not found when the definition of administrator is narrowed exclusively to the department level. This may reflect that the positions of chair and director typically occur earlier in an academic career than university-level administrative appointments.

A quality measure of an economist's PhD institution is used to indirectly control for productivity in the reduced-form probit models (2.5) and (2.6). The variable is defined to equal 0 if the publication ranking is outside the top 35 and equals 1 divided by the publication rank if ranked in the top 35. This measure is expected to be correlated with publishing productivity because economists who receive graduate training at more research-oriented institutions are likely to be more productive than economists trained at less research-focused institutions. However, these variables are exogenous to whether an individual becomes an administrator later in his or her career.

An economist's primary research field is another indirect productivity control. This variable is captured by a set of dummies for specializing in Theory and Methods, Macroeconomics, Economic History or History of Economic Thought, Applied Microeconomics, Agricultural and Natural Resource Economics, Business disciplines, Related Fields, or General Economics. These variables are correlated with publishing because there may be field-specific norms and time lags for publication activity. In addition, since specific knowledge and skill sets may differ across subfields, these field controls may also reflect differential opportunity costs associated with career departures into administrative work.

Demographic and sociological variables include controls for gender and whether the economist immigrated to the U.S. The binary gender control, which equals 1 for female economists, is included to examine whether women have similar access to administrative careers as men (e.g., Wyche & Graves, 1992). The control for economists who are U.S. immigrants (i.e, a binary variable that equals 1 for all foreign-born economists) allows for the possibility that language and/or cultural barriers affect access to leadership roles. Current job-specific attributes include department size and the

departmental publication ranking. Working in a larger department may decrease the likelihood of being an administrator due to a greater number of potential candidates for these positions, but may increase the likelihood because larger departments have more administrative tasks to distribute and tend to be in larger institutions, which have a greater demand for administrators. Publication ranking for the current job is measured with a dummy for whether or not the current department is ranked in the top 50 of the publication rankings in the directory year[5]. Departments that demonstrate publication excellence have a faculty who are among the best in their field and who are likely to have relatively low tastes for administrative and other non-research academic activities. Thus, economists in these departments should have relatively low likelihoods of being administrators.

Labor market conditions are captured by the size of the individual's academic job market cohort. Specifically, the cohort size is the number of other economists in the sample who entered the profession within a five-year window surrounding the individual's own entry. This variable is expected to have a positive effect on the likelihood of being an administrator, because in eras that produce a large number of academics, bureaucratic structures will become more layered and complex, resulting in a relatively high institutional demand for administrators (e.g., Leslie & Rhoades, 1995; Gumport & Pusser, 1995). Finally, the data include two binary variables that equal 1 for the decades represented in our sample: the 1990's that includes the directory dates 1993 and 1997; and the 1980s that include directory dates 1985 and 1989. The excluded control group includes the directory dates 1964 and 1974. These binary variables allow us to detect temporal patterns in the tendency to become an administrator that may reflect

[5] The rankings are from Graves, Marchand and Thompson (1982).

changes in the relative valuation of the different components of academic work (i.e., increasing emphasis on research). In particular, because of the increasingly quantitative and technical nature of the economics profession, along with the increasing emphasis on research at many institutions, there may be a negative time trend in the likelihood of being an administrator to accommodate the greater demand for faculty research time (e.g., Hansen & Guidugli, 1990). However, widespread recent budget cuts in higher education may mitigate this trend in later sample years (e.g., Covaleski & Dirsmith, 1988; Hackett, 1990; Gates, 1997).

Descriptive statistics for the full sample and disaggregated by whether or not an economist is an administrator are presented in Table 1. The means indicate that, relative to non-administrators, those holding administrative posts enter the profession with smaller cohorts, work in smaller departments, and have significantly greater experience in the profession. Administrators are also less likely than non-administrators to be female or foreign-born, to have received their PhDs from top 35 institutions, or to have current jobs in top 50 departments. There also appear to be differences in field of specialization, with administrators more likely to specialize in Applied Microeconomics or Business but less likely to specialize in Theory and Methods. The subsequent empirical analyses examines whether these patterns remain conditioned on other observed characteristics.

[Insert Table 1 about here]

IV. Results

4.1 Regression Results for Full Sample

The empirical results for the standard and random-effects probit models are presented in Table 2 for the base specification and for a specification in which the time dummies are interacted with the female binary variable. The coefficients on most of the

explanatory variables are significant at traditional levels and have the expected signs. On the other hand, the magnitudes of coefficients are generally quite small, suggesting that no particular component of an academic economist's career is determinative to becoming an administrator. In general, the coefficients from the standard and random-effects probit models are of the same sign and, except for certain field controls provide roughly equivalent levels of significance. However, the coefficient estimates provided by the random-effects probit are an average of five times smaller in absolute value, suggesting that these variables that measure observable personal characteristics are correlated with unobserved attributes that relate directly to utility maximizing choice of becoming an administrator. This finding is important because it suggests that observed productivity as an academic affects the choice of becoming an administrator both directly because it affects the opportunity cost of the choice but also indirectly because it correlates with the skills that are necessary to perform the job. The coefficients between the base and interactive specifications do not qualitatively differ; thus, the discussion will focus on the basic specification except to note the possible time interactive effects with gender.

[Insert Table 2 about here]

The results for the human capital variables indicate that the probability an academic economist selects an administrative track relates to "administrative-specific" skills. The coefficients on the experience variables in both the standard and random effects models indicate that the probability of becoming an administrator increases at a decreasing rate up to an experience level of approximately 30 years. Since the average age at PhD is just over 30 years of age, the probability of being observed in an administrative position increases with experience over the majority of an academic economist's career. However, while the experience-administrator profile is nearly

identical between the standard and random-effects probit models, the coefficients in the random effects probit are nearly 5 times smaller. This result suggests that experience as an academic is broadly correlated with the skills necessary to be an administrator but that its direct causal effect is smaller than the indirect affect through other abilities that make the choice of administration worthwhile.

The coefficient on the variable that relates to the quality of academic training suggests that economists who have accumulated human capital related to research production are less likely to become administrators. Specifically, the findings indicate that academic economists who received their PhDs from top 35 programs (i.e., more research-oriented PhD programs) are less likely to become administrators. Moreover, the size of the PhD cohort also appears to be important, indicating that academic economists from larger PhD cohorts are more likely to select into administration. This result may reflect a greater institutional demand for administrators as the academic profession grows larger. Alternatively, it may suggest that greater competition in the academic labor market places a greater limit on research opportunities, causing a greater number of PhD economists to select into administrative positions. Finally, the coefficient on age at PhD is positive and significant, suggesting that academic economists who are able to more rapidly complete their PhDs are less likely to become administrators later in their careers.

The coefficients on a number of the field variables are insignificant indicating that these areas of academic emphasis do not differ in their likelihood of producing administrators relative to the "General Economics" field specialty. On the other hand, the coefficient on the Theory and Methods field is negative and significant in the standard probit specification, whereas the coefficients on Applied Microeconomics and Business fields are positive and significant in both the standard and random effects probit

specifications. Thus, economists in fields that are furthest away from applied topics appear less likely to choose administrative positions, whereas those fields that focus on applied topics (that may well inform administrative decisions) are more likely to select into administration.

Some department-level controls are also important. Consistent with a greater number of colleagues reducing the opportunity to obtain administrative positions, the coefficient on department size is negative; however, it is insignificant. The coefficient on the binary variable that equals one if the department is listed as a top-50 department is negative and significant indicating that economists who place in relatively more research-oriented departments are less likely to select administrative positions. This is consistent with the prior findings for top-35 PhD that also suggest that greater academic productivity, all else equal, raises the opportunity cost of becoming an administrator. While it is possible that research productivity also may raise the productivity of an academic in administrative tasks, our results suggest that these skills are relatively more valued in the academic research-oriented track. Nonetheless, subsequent analyses examine this issue in greater detail by examining direct and indirect measures of research productivity.

The coefficients on the binary variables measuring whether the economist is foreign born or female are both negative and significant. More specifically, the coefficients in the standard probit specification indicate that foreign-born economists have a 1.4 percent lower probability of becoming an administrator, whereas female economists have approximately a 1 percent lower probability of entering an administrative position. Whereas these findings are consistent with discrimination against foreign-born and female economists for positions of leadership, the magnitudes of

these coefficients are relatively small in comparison to other attributes such as the field of specialization or the quality of the PhD-granting or current department.

The binary variables that equal one for observations from the decades of the 1980s and the 1990s are both negative and significant, suggesting that economists in the 1960s and 1970s are relatively more likely to be administrators controlling for experience and other observed attributes. This result may reflect that the profession has become more specialized over time, including the specialization within specific tracks of academic employment. That is, as the technical nature of the profession has become increasingly complex, economists may have found it optimal to be more focused within particular career paths, since switching into and then subsequently back out of an administrative position (i.e., to return once again to a more research-oriented career path) has become more costly. Consequently, those academic economists who do become administrators will have longer tenures doing so, and therefore the probability for any randomly-selected academic economist being in administration will decline over time.

While women comprised roughly 3 percent of the profession during the 1960s, the percentage of female economists grew rapidly after late 1960s such that they comprised roughly a third of new PhDs in the 1990s. To examine whether this general expansion of women in economics has been accompanied by their increased representation in administrative positions within the university, the female binary variable is interacted with the binary variables indicating the decade. The coefficient on the female binary variable roughly doubles in the interactive versus non-interactive specification, suggesting that female economists in the 1960s and 1970s had less administrative opportunities. Moreover, the coefficient on the interaction terms are both positive suggesting improved administrative opportunities for female economists in later

decades. Nonetheless, the coefficients on the interaction terms are also both insignificant, indicating that there is no definitive trend in the opportunities of female economists as administrators.

4.2 Regression Results by Tier of Institution

The previous results indicate that research-specific investments reduce the probability of selecting into an administrative position. However, institutions differ distinctly in their research expectations, which may affect the importance of a knowledge and capability of research in order to effectively administer a faculty. Thus, to test the sensitivity of our human capital findings, we re-estimate our specifications presented in Table 2 separately by the research-orientation of the institution. Specifically, we use the Carnegie Tier 1 research classification to indicate that institutions that have a high research expectation across fields relative to those institutions that fall outside the Tier 1 research classification.[6] These specifications are presented in Table 3 for the gender-time interactive specifications presented in the last columns of Table 2. The results for coefficients not related to gender and time are largely unaffected by the inclusion of the interactive terms and, thus, these non-interactive specifications are excluded for brevity.

[Insert Table 3 about here]

The results generally suggest that the role of research-specific human capital investments differ distinctly with institutional mission. Specifically, the marginal effect for experience has a flatter career profile with peak at between 25 and 27 years of experience at Tier 1 institutions in the standard and random-effects probit specifications respectively, whereas, the marginal effect for experience has a steeper career profile with

[6] Information on Carnegie Research Classification is obtained from the Carnegie Foundation's website (*www.Carnegie.org)*. Tier 1 institutions are the most research-intensive institutions that attract the greatest amounts of external research funding relative to non-Tier 1 institutions.

a peak between 30 and 36 years of experience at non-Tier 1 institutions. Thus, time on the job appears to be relatively more important in institutions with less of a research orientation.

The relative importance of the indirect measures of productivity also varies between Tier 1 and non-Tier 1 institutions. In particular, academic economists who earn their PhD at an older age are more likely to switch into administration at Tier 1 institutions, whereas this age effect is not statistically significant at non-Tier 1 institutions. Because academic economists who receive a PhD at an earlier age appear to have exhibited a more directed research-oriented career focus, this result suggests that drive towards career advancement may be relatively important in the decision not to become an administrator at Tier 1 institutions. However, conditioned on age at PhD, the impact of a PhD from a top program has a relatively large negative effect on the probability of becoming an administrator at non- Tier 1 institutions. This result may indicate that departments in less research-orientated institutions steer research-productive academics away from an administrative track. Likewise, economists from larger cohorts are more likely to select into administration in non-Tier 1 institutions, whereas there is no significant effect of cohort size in Tier 1 institutions. Thus, the importance of drive, academic performance, and market opportunities early in a career on the choice of administration vary depending on the research orientation of the institution, which suggest that the formative factors that cultivate an administrative choice vary with institutional missions.

On the other hand, the field-of-specialization variables yield the same pattern across the research-orientation of the institutions. In particular, similar to the results for the full sample, the fields of Applied Microeconomics and Business are more likely to

select into administration. However, the coefficients on Theory and Methods, although negative for all specifications in Table 3, are significant only for non-Tier 1 institutions. Overall, the results suggest that an interest in applied microeconomic problems yields either an administrative aptitude or an interest in administrative matters not found for economists specializing in other areas.

The impact of department-level factors also varies with the research tier of the institution. Specifically, economists from larger departments are less likely to select into administration if placed in a non-Tier 1 institution, whereas this effect is insignificant for Tier 1 schools. This may reflect, for example, that administrative positions such as chair are more frequently rotated among the faculty within research-oriented departments, perhaps because administration is viewed as a temporary service to the department as opposed to a more permanent career move into administration. Along this same line of reasoning it may be noted that, whereas the coefficients on the binary variables distinguishing the 1980s and 1990s decades are negative and significant for both Tier 1 and non-Tier 1 institutions, the magnitudes of the coefficients for Tier I institutions are approximately half the size of those for non-Tier 1 institutions. The sharper decline in the probability of being an administrator at non-Tier 1 institutions could be explained by an increase over time in the movement of non-Tier 1 academicians into relatively more permanent (and therefore longer tenured) administrative positions. Finally, this general hypothesis is consistent with the finding that placing in a top-50 economics department is associated with a lower probability of selecting into administration for non-Tier 1 institutions, but not for Tier 1 institutions. Thus, non-Tier 1 universities appear less likely to draw faculty from their relatively research-oriented departments on campus, such as a top-50 economics department in a non-Tier 1 institution.

The importance of personal attributes of economists can also vary with the research orientation of the institution. In particular, foreign-born economists are significantly less likely to become administrators in Tier 1 institutions, whereas this impact is insignificant in non-Tier 1 schools. This result may reflect the relative importance of communication skills with faculty, students, and donors at top institutions, but may also reflect that research-oriented foreign economists migrate to U.S. institutions with different objectives than those who are less research-oriented because of differential opportunities in their source countries. On the other hand, the coefficient on the female binary variable, while continuing to be negative, is insignificant in all specifications, which may well reflect the smaller sample size in the tier-specific regressions.

The gender variables and the interaction terms are generally insignificant for Tier 1 institutions, but the coefficient on female for non-Tier 1 institutions is negative and significant. This result suggests that female economists had relatively lower administrative opportunities during the 1960 and 1970s in less research-oriented departments. This result is consistent with prior findings suggesting that women had lower placement and promotion opportunities than their male counterparts within economics (e.g. McDowell, Singell, and Ziliak, 2001). However, the interactive terms, although positive, are insignificant in all specifications suggesting no significant improvement in female economist's opportunities as administrators.

4.3 Career Interval Approach

The previous analysis included indirect (predetermined) measures of research productivity because the instantaneous decisions to select into administration and publish are likely to be endogenous. However, to more directly examine the effects of (exogenous) changes in productivity on the likelihood of being an administrator, we

adopt an alternative approach that focuses on a career interval (e.g., between 1964 and 1974) as the unit of observation rather than a particular point of time. Specifically, for those economists appearing in consecutive cross-sections at least eight years apart, we examine whether publishing productivity measured at the beginning of the period affects the probability of holding an administrative position at the end of the period.

This career interval approach follows from redefining the expression in (2.6), $\Pr[A_i = 1] = \Phi(x_i\beta + \lambda_i)$, such that A_i represents a dummy variable that equals 1 if the economist is an administrator at the end of a time interval, x_i is a vector of controls defined either at the beginning or the end of a career interval and λ_i represents the individual-specific unobserved heterogeneity. Specifically, in addition to the exogenous variables previously included in x_i defined at the end of a career interval, we add the number of pages published as of the beginning of the career interval, a dummy for whether or not the economist moved to a different institution (at least once) over the career interval, and a dummy for whether the economists was observed as an administrator at the beginning of the period.[7] These additional variables can be thought of a predetermined in the sense that they occur prior to the end of the period.

Table 4 includes the results from standard and random effects probit models using the 4404 observations from the full sample of economists observed in at least one of four career intervals: 1964-1974, 1974-1985, 1985-1993, and 1989-1997. The results in Table 4 for the variables included in prior specifications are generally of the same sign and

[7] The AEA data are supplemented with information regarding articles published in the years of the sample. Because it is reasonable to expect that research produced over a short interval of time depends on the current researcher attributes available in the data, we obtain information related to contemporaneous publication activity for each of the sample years. For the membership years between 1964 and 1993, the publication records are obtained from issues of the AEA *Index of Economic Articles*. Publishing productivity contemporaneous with the membership year is measured by counting the number of total pages in articles published in the year of the cross section or the subsequent year (i.e., 1964-65, 1974-75, 1985-86, and 1989-90).

similar magnitude, although the smaller sample leads to a decline in the level of significance for some variables such as gender.[8] Moreover, as shown by Appendix Table 1, the addition of the direct publication measure (with the career variables excluded) does not generally affect the sign or significance of the other explanatory variables. Likewise, a comparison of Appendix Table 1 with Table 4 suggests that the non-career coefficients are relatively insensitive to the inclusion of the career variables. These findings are consistent with the assertion that the direct productivity and career variables are predetermined. Thus, for brevity, the discussion focuses on the newly introduced controls for publications, previous administrative experience, and movers (i.e., Table 4 as opposed to Appendix Table 1).

[Insert Table 4 about here]

The results for the full sample presented in columns 1 and 2 of Table 4 indicate each of the new controls is significant. In particular, the coefficient on the direct productivity measure is negative and significant indicating that academic economists are less likely to select into administration at the end of the period as they publish more at the beginning of the period. On the other hand, the coefficients on the binary variables that equal one for previous administrative experience and for movers are both positive and highly significant. In particular, the magnitude of the coefficient for prior administrative experience indicates between a 24 and 40 percent higher probability selecting into administration at the end of the period if observed in administration at the beginning of the period. Thus, there is high degree of recidivism in administration, suggesting that it may be hard to return to a pure academic track once an economist enters into

[8] The specifications in Table 4 exclude a quadratic term for experience, because its coefficient is insignificant and is sufficiently correlated with the linear experience term such that the coefficient for the linear term is also not significant when the quadratic term is included. This result is not surprising since the experience variable, in this case, relates to the return over an interval of time as opposed to a single year.

administration. Moreover, the coefficient for movers also suggests that changing institutions is an avenue into administration.

The tier-specific regressions are presented in columns 3 through 6 of Table 4. The coefficients on the variable measuring the number of articles at the beginning of the period are negative and similar in magnitude for those universities in and out of the first research tier of institutions, but only the coefficient for Tier 1 institutions is significant. However, the coefficients on the binary variable for administrator at the beginning of the period are positive, significant, and of the same magnitude for both Tier 1 and non-Tier 1 institutions. Thus, the recidivism of the administrative track appears to be similar across institutions with different research orientations. However, the coefficient for changing jobs over the period is significantly positive only for Tier 1 institutions, suggesting that changing institutions to enter the administrative track is prevalent only among relatively research-oriented institutions. This result may reflect that the administrative productivity of economists from Tier 1 institutions is more closely tied to their research productivity that can more easily be observed by other universities.

V. Concluding Remarks

Quality administrative stewardship is crucial to the success of the U.S. higher education system, which is both a nationally critical and internationally renowned industry. Yet, few studies have examined the factors that determine who chooses to enter into university administration. This paper uses rich panel data culled from American Economic Association membership directories over a period of more than thirty years to examine the role human capital investments play in the decision to exit the pure academic track into administration.

The results show that academic economists who eventually enter into university administration systematically exhibit general skills and make less research-specific investments over their career relative to those who remain in the academic track. For example, economists who obtain PhDs from or place in more research-oriented economics departments are less likely to select into administration, whereas years of experience and specializing in an applied field increase the probability of choosing administration. In addition, female and foreign-born economists are found to be less likely to place in an administrative job, suggesting that sharing common experiences or language with the historical majority of the academy may facilitate becoming an administrator. However, the coefficients from random-effects probit models have the same sign but are typically five-times smaller in absolute magnitude than those of the same standard probit specifications, suggesting that the personal-attribute variables are correlated with unobserved attributes that relate directly to the utility-maximizing choice of becoming an administrator. Thus, the decision to enter university administration depends on an academic's portfolio of human capital investments and related, unobserved (innate) skills.

Sensitivity tests confirm the broad findings drawn from the base specifications, but also show that the role that human capital plays in the administrative choice depends on the institutional setting and career profile. Specifically, separate estimates for institutions classified and not classified as Tier 1 research institutions indicate that research orientation is relatively more valued and general experience is less valued for administrators in universities that have research as a primary mission, which suggests that administrative skill depends on institutional attributes. Likewise, specifications that examine how an academic's predetermined behavior at the beginning of the period affect

his or her selection into administration at the end of the period indicate that the early-career choices such as how much to publish, the decision not to change institutions or to select into administration reduce the likelihood of later becoming an administrator.

Overall, the results suggest that leaders are not simply born but are cultivated and shaped by the human capital investments they make over the course of their career. However, the adage that "those that can, do; those that can't, teach" may apply in many instances to managers in high-skill professions, because leadership ability results from relatively general versus skill-specific human capital investments. Thus, university administrators should be congratulated for the width, and not necessarily the depth, of their abilities.

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Table 1 Descriptive Statistics for Full Sample and by Administrator Choice and Tier of Institution

	Full Sample		Not an Administrator		Administrator		Tier 1 Institutions		Not Tier 1 Institutions	
Variable |	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Administrator	0.0732	0.2605	0.0000	0.0000	1.0000	0.0000	0.0625	0.2420	0.0895	0.2855
Experience	13.2784	9.0455	12.8748	9.0080	18.3857	7.8946	13.5498	9.3056	12.8665	8.6206
Age at PhD	30.0516	4.0267	30.0122	3.9791	30.5495	4.5602	29.4649	3.7469	30.9417	4.2666
Top 35 PhD Institutions	0.1638	0.2419	0.1657	0.2434	0.1391	0.2214	0.1981	0.2610	0.1118	0.1988
Cohort Size[a]	0.1928	0.0693	0.1943	0.0678	0.1736	0.0833	0.1895	0.0710	0.1977	0.0662
Theory and Methods	0.2823	0.4501	0.2880	0.4528	0.2098	0.4074	0.2991	0.4579	0.2566	0.4368
Macroeconomics	0.3004	0.4584	0.3001	0.4583	0.3043	0.4604	0.2986	0.4577	0.3032	0.4596
History of Thought	0.0872	0.2821	0.0853	0.2794	0.1109	0.3142	0.0767	0.2662	0.1030	0.3041
Applied Microeconomics	0.6130	0.4870	0.6092	0.4879	0.6604	0.4738	0.6049	0.4889	0.6252	0.4841
Related Field	0.0044	0.0663	0.0041	0.0644	0.0076	0.0874	0.0037	0.0610	0.0054	0.0737
Business	0.0870	0.2819	0.0834	0.2764	0.1340	0.3491	0.0918	0.2710	0.0798	0.2710
Department Size	15.6127	11.0073	15.7425	11.0237	13.9700	10.6678	21.4276	10.2651	6.7909	3.9989
Top 50 Current Job	0.4799	0.4996	0.4873	0.4999	0.3868	0.4873	0.7645	0.4243	0.0482	0.2142
Foreign Born	0.3652	0.4815	0.3702	0.4829	0.3011	0.4590	0.3828	0.4861	0.3385	0.4732
Female	0.1671	0.3730	0.1715	0.3769	0.1110	0.3143	0.1507	0.3578	0.1918	0.3938
1980s	0.3756	0.4862	0.3866	0.4870	0.3428	0.4749	0.3756	0.4889	0.3952	0.3756
1990s	0.4021	0.4903	0.4071	0.4913	0.3395	0.4738	0.4044	0.4897	0.3987	0.4044
Number of Obs.	12427		11517		910		7490		4937	

a – Tier 1 equals one for institutions that are listed as a Tier 1 Research Institution in the 1987 Carnegie Classification system of higher educational institutions. Cohort size defined as number of PhD AEA members defined in 1000s.

Table 2 Marginal Effects from a Probit Analysis Administrator Choice for Full Sample

	Basic Specification		Female-Time Interactions	
	Standard	Random Effects	Standard	Random Effects
Variables	Probit	Probit	Probit	Probit
Experience	0.0116***	0.0024***	0.0116***	0.0025***
	(0.0008)	(0.0003)	(0.0008)	(0.0003)
Experience Squared	-0.0002***	-0.00004***	-0.0002***	-0.00004***
	(0.0000)	(0.00001)	(0.0000)	(0.00001)
Age at PhD	0.0020***	0.0005***	0.0020***	0.0005***
	(0.0004)	(0.0001)	(0.0004)	(0.0001)
Top 35 PhD Institutions	-0.0247***	-0.0045**	-0.0248***	-0.0045**
	(0.0081)	(0.0022)	(0.0081)	(0.0022)
Cohort Size[a]	0.1382***	0.0191**	0.1371***	0.0189***
	(0.0368)	(0.0094)	(0.0369)	(0.0094)
Theory and Methods	-0.0075*	-0.0013	-0.0074*	-0.0013
	(0.0044)	(0.0010)	(0.0044)	(0.0010)
Macroeconomics	0.0039	0.0013	0.0039	0.0013
	(0.0044)	(0.0012)	(0.0044)	(0.0012)
History of Thought	0.0058	0.0007	0.0055	0.0006
	(0.0068)	(0.0018)	(0.0068)	(0.0018)
Applied Microeconomics	0.0159***	0.0032***	0.0157***	0.0032***
	(0.0042)	(0.0011)	(0.0042)	(0.0011)
Related Field	0.0292	0.0081	0.0354	0.0112
	(0.0331)	(0.0117)	(0.0351)	(0.0141)
Business	0.0288***	0.0081***	0.0285***	0.0079
	(0.0083)	(0.0034)	(0.0083)	(0.0033)
Department Size	-0.0002	-0.00003	-0.0002	-0.00003
	(0.0003)	(0.0001)	(0.0003)	(0.0001)
Top 50 Current Job	-0.0181***	-0.0039***	-0.0179***	-0.0039***
	(0.0056)	(0.0016)	(0.0056)	(0.0015)
Foreign Born	-0.0143***	-0.0034***	-0.0142***	-0.0034***
	(0.0037)	(0.0010)	(0.0037)	(0.0010)
Female	-0.0099**	-0.0023**	-0.0217**	-0.0045***
	(0.0050)	(0.0011)	(0.0092)	(0.0015)
1980s	-0.0560***	-0.0119***	-0.0585***	-0.0126***
	(0.0051)	(0.0017)	(0.0053)	(0.0019)
1990s	-0.0725***	-0.0157***	-0.0728***	-0.0159***
	(0.0062)	(0.0024)	(0.0065)	(0.0025)
Female*1980s	-	-	0.0341	0.0119
			(0.0217)	(0.0091)
Female*1990s	-	-	0.0088	0.0040
			(0.0171)	(0.0054)
Observations	12427	12427	12427	12427
Number of Panel Obs.	-	5210	-	5210
Log-Likelihood	-2886.28	-2485.12	-2884.08	-2482.64

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a –Cohort size defined as number of PhD AEA members defined in 100s.

Table 3 Marginal Effects from a Probit Analysis for Administrator Choice by Research Orientation of University

	Tier 1 Institutions		Not Tier 1 Institutions	
	Standard	Random Effects	Standard	Random Effects
Variables	Probit	Probit	Probit	Probit
Experience	0.0100***	0.0017***	0.0145***	0.0040***
	(0.0008)	(0.0003)	(0.0015)	(0.0007)
Experience Squared	-0.0002***	-0.00003***	-0.0002***	-0.0001***
	(0.0000)	(0.00001)	(0.0000)	(0.00001)
Age at PhD	0.0023***	0.0004***	0.0010	0.00037
	(0.0005)	(0.0001)	(0.0008)	(0.00026)
Top 35 PhD Institutions	-0.0136*	-0.0018	-0.0502***	-0.0136**
	(0.0082)	(0.0018)	(0.0179)	(0.0063)
Cohort Size	0.0300	0.0009	0.3179***	0.0684***
	(0.0436)	(0.0086)	(0.0655)	(0.0231)
Theory and Methods	-0.0016	-0.0003	-0.0188**	-0.0037
	(0.0049)	(0.0010)	(0.0080)	(0.0024)
Macroeconomics	-0.0006	0.0001	0.0094	0.0032
	(0.0048)	(0.0010)	(0.0081)	(0.0029)
History of Thought	0.0056	0.0004	0.0093	0.0031
	(0.0080)	(0.0017)	(0.0123)	(0.0047)
Applied Microeconomics	0.0134***	0.0022***	0.0171**	0.0041*
	(0.0047)	(0.0010)	(0.0077)	(0.0025)
Related Field	-0.0011	-0.0005	0.0927	0.0377
	(0.0273)	(0.0044)	(0.0763)	(0.0472)
Business	0.0147*	0.0030	0.0549***	0.0220**
	(0.0086)	(0.0024)	(0.0168)	(0.010)
Department Size	0.0000	0.00002	-0.0022**	-0.0006***
	(0.0002)	(0.0001)	(0.0009)	(0.0003)
Top 50 Current Job	-0.0107*	-0.0018	-0.0434***	-0.0075***
	(0.0065)	(0.0016)	(0.0093)	(0.0021)
Foreign Born	-0.0173***	-0.0029***	-0.0070	-0.0032
	(0.0041)	(0.0010)	(0.0072)	(0.0023)
Female	-0.0098	-0.0019	-0.0391**	-0.0096***
	(0.0114)	(0.0010)	(0.0159)	(0.0031)
1980s	-0.0400***	-0.0069***	-0.0877***	-0.0251***
	(0.0060)	(0.0016)	(0.0097)	(0.0047)
1990s	-0.0490***	-0.0086***	-0.1064***	-0.0304***
	(0.0077)	(0.0021)	(0.0114)	(0.0060)
Female*1980s	0.0196	0.0038	0.0580	0.0029
	(0.0226)	(0.0063)	(0.0423)	(0.0025)
Female*1990s	-0.0143	-0.0012	0.0495	0.0189
	(0.0127)	(0.0022)	(0.0407)	(0.0203)
Observations	7490	7490	4937	4937
Number of Panel Obs.	-	3247	-	2274
Log-Likelihood	-1529.88	-1322.71	-1328.74	-1143.40

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

a – Tier 1 equals one for institutions that are listed as a Tier 1 Research Institution in the 1987 Carnegie Classification system of higher educational institutions. Cohort size defined as number of PhD AEA members defined in 100s.

Table 4 Marginal Effects from a Probit Analysis for Administrator Choice for Full Career Snapshot Sample (Direct productivity and career variables)

	Full Sample		Tier 1 Institutions		Not Tier 1 Institutions	
Variables	Standard Probit	Random Effects Probit	Standard Probit	Random Effects Probit	Standard Probit	Random Effects Probit
Experience at End of Period	0.0018***	0.0012***	0.0028***	0.0022***	0.0001	0.0004
	(0.0006)	(0.0004)	(0.0007)	(0.0006)	(0.0011)	(0.0007)
Articles at Beginning of Period	-0.0103***	-0.0058***	-0.0104***	-0.0071***	-0.0088	-0.0062
	(0.0031)	(0.0019)	(0.0033)	(0.0025)	(0.0062)	(0.0041)
Theory and Methods	-0.0010	0.0024	0.0116	0.0010	-0.0253	-0.0131
	(0.0099)	(0.0064)	(0.0119)	(0.0096)	(0.0162)	(0.0098)
Macroeconomics	-0.0128	-0.0040	-0.0146	-0.0080	-0.0138	-0.0052
	(0.0089)	(0.0055)	(0.0104)	(0.0079)	(0.0152)	(0.0098)
History of Thought	0.0176	0.0085	0.0283	0.0197	0.0063	0.0028
	(0.0155)	(0.0011)	(0.0205)	(0.0017)	(0.0242)	(0.0168)
Applied Microeconomics	0.0286***	0.0187***	0.0279***	0.0217***	0.0236	0.0153
	(0.0087)	(0.0053)	(0.0103)	(0.0078)	(0.0150)	(0.0095)
Business	0.0188	0.0119	0.0152	0.0117	0.0288	0.0185
	(0.0171)	(0.0121)	(0.0205)	(0.0.167)	(0.0295)	(0.0227)
Department Size	0.0005	0.0003	0.0006	0.0004	-0.0010	-0.0008
	(0.0006)	(0.0004)	(0.0006)	(0.0005)	(0.0017)	(0.0011)
Top-50 Job Placement	-0.0195*	-0.0127*	-0.0198	-0.0160	-0.0639***	-0.0283***
	(0.0118)	(0.0075)	(0.0148)	(0.0122)	(0.0176)	(0.0083)
Foreign Born	-0.0221**	-0.0118**	-0.0343***	-0.0225***	-0.0036	-0.0037
	(0.0091)	(0.0058)	(0.0108)	(0.0085)	(0.0155)	(0.0102)
Female	-0.0213*	-0.0103	-0.0161	-0.0091	-0.0278	-0.0161
	(0.0130)	(0.0081)	(0.0159)	(0.0121)	(0.0214)	(0.0138)
Year Ending in 1985	-0.0250**	-0.0189**	-0.0259*	-0.0223***	-0.0231	-0.0191
	(0.0118)	(0.0052)	(0.0128)	(0.0076)	(0.0217)	(0.0103)
Year Ending in 1993	-0.0018	-0.0183**	-0.0135	-0.0269***	0.0050	-0.0066
	(0.0096)	(0.0053)	(0.0105)	(0.0086)	(0.0182)	(0.0128)
Year Ending in 1997	-0.0347**	-0.0274***	-0.0301**	-0.0392***	-0.0087	-0.0014
	(0.0117)	(0.0034)	(0.0104)	(0.0087)	(0.0234)	(0.0129)
Administrator Beginning of Period	0.3956***	0.2320***	0.3891***	0.2832***	0.3965***	0.2594***
	(0.0295)	(0.0348)	(0.0413)	(0.0459)	(0.0423)	(0.0523)
Changed Jobs During Period	0.0342***	0.0218***	0.0448***	0.0368***	0.0229	0.0143
	(0.0115)	(0.0080)	(0.0143)	(0.0122)	(0.0196)	(0.0132)
Observations	4404	4404	2702	2702	1702	1702
Number of Panel Obs.		2433	-	1478	-	1001
Log Likelihood	-1144.15	-1100.34	-655.38	-636.39	-477.49	-456.71

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

a – Tier 1 equals one for institutions that are listed as a Tier 1 Research Institution in the 1987 Carnegie Classification system of higher educational institutions. Cohort size defined as number of PhD AEA members defined in 100s.

Appendix Table 1 Marginal Effects from a Probit Analysis for Administrator Choice for Full Career Snapshot Sample (Direct versus indirect productivity controls with career variables excluded)[a]

	Indirect Productivity Measures		Direct Productivity Measure	
	Standard	Random	Standard	Random
Variables	Probit	Effects Probit	Probit	Effects Probit
Experience at End of Period	0.0068***	0.0023***	0.0038***	0.0014***
	(0.0008)	(0.0004)	(0.0006)	0.0003
Articles at Beginning of Period	-	-	-0.0164***	-0.0050***
			(0.0033)	0.0014
Age at PhD	0.0067	0.0002	-	-
	(0.0012)	(0.0005)		
Top 35 PhD Institution	-0.0629***	-0.0212***	-	-
	(0.0200)	(0.0089)		
Cohort Size	0.0031***	0.0011**	-	-
	(0.0011)	(0.0005)		
Theory and Methods	-0.0059	0.0002	-0.0019	0.0013
	(0.0102)	(0.0044)	(0.0104)	(0.0045)
Macroeconomics	-0.0067	-0.0004	-0.0079	-0.0009
	(0.0097)	(0.0040)	(0.0097)	(0.0040)
History of Thought	0.0204	0.0065	0.0151	0.0045
	(0.0163)	(0.0079)	(0.0158)	(0.0073)
Applied Microeconomics	0.0317***	0.0126***	0.0332***	0.0129***
	(0.0093)	(0.0038)	(0.0092)	(0.0038)
Business	0.0442**	0.0205	0.0374**	0.0141
	(0.0206)	(0.0169)	(0.0194)	(0.0108)
Department Size	-0.00004	0.00003	0.00002	0.0001
	(0.0001)	(0.0003)	(0.0006)	(0.0003)
Top-50 Job Placement	-0.0271**	-0.0103*	-0.0239*	-0.0094*
	(0.0125)	(0.0054)	(0.0125)	(0.0054)
Foreign Born	-0.0201**	-0.0073*	-0.0199**	-0.0073*
	(0.0097)	(0.0042)	(0.0095)	(0.0041)
Female	-0.0196	-0.0048	-0.0279**	-0.0077
	(0.0159)	(0.0057)	(0.0141)	(0.0058)
Year Ending in 1985	-0.0599***	-0.0204***	-0.0326**	-0.0142***
	(0.0124)	(0.0040)	(0.0118)	(0.0033)
Year Ending in 1993	-0.0816***	-0.0304	-0.0327**	-0.0156***
	(0.0168)	(0.0071)	(0.0123)	(0.0041)
Year Ending in 1997	-0.1035***	-0.0394***	-0.0512***	-0.0220***
	(0.0175)	(0.0088)	(0.0120)	(0.0046)
Observations	4404	4404	4404	4404
Number of Panel Obs.		2433		2433
Log Likelihood	-1319.95	-1167.19	-1316.94	-1166.32

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

a –Cohort size defined as number of PhD AEA members defined in 100s.