What Determines Alumni Generosity?

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Abstract—Alumni giving is correlated with institutional characteristics, such as quality and development efforts, and student characteristics, such as quality and wealth. Empirical analysis is complicated by the expected correlation between institutional quality and student wealth, and the possible endogeneity between institutional expenditures on education (one common measure of quality) and the level of alumni support the institution receives. This paper uses a two-stage least squares approach with data on quality and variables correlated with student wealth to address these issues. Quality variables are found to have a positive impact on the average alumni gift, with that impact most significant for private universities and liberal arts colleges. Wealth variables also have a positive impact on the average gift, with the estimated coefficients most significant for public universities. Development effort is very important in determining the level of giving for all three types of institutions. [JEL 121]

FINANCIAL CONTRIBUTIONS from alumni constituted the single most important source of voluntary support for higher education in 1992.¹ Alumni giving increased over 75% between 1985 and 1992, by which time it represented more than 27% of total voluntary contributions to higher education.² Understanding the factors that determine alumni generosity becomes more important as colleges and universities of all types rely more heavily on alumni support.

Clearly the wealth of the student body is of great importance in determining their alumni giving. Relatively recent research indicates that the quality of their educational experiences also significantly influences the generosity of alumni. However, the fact that quality colleges and universities attract students of financial means poses an empirical problem. Specifically, the impact institutional quality variables have on alumni giving must be separated from the role that student wealth and disposition toward giving plays in the alumni body's willingness to give. To our knowledge past research has not adequately accounted for this "rich-student, quality-school" bias in explaining the alumni giving phenomenon. The purpose of this paper is to address this identification problem.

In addressing this issue, three types of schools are considered: public and private doctoral granting (research) universities, and liberal arts colleges. The paper finds that alumni giving to colleges and universities is influenced by institutional quality, as well as institutional development effort.

The study is organized as follows. In section 1 the literature on alumni giving is reviewed. Section 2 describes the theoretical framework the paper develops to understand the alumni-giving phenomenon. Empirical results are presented and analyzed in section 3. Section 4 discusses policy implications as they relate to institutional efforts to encourage alumni contributions.

1. REVIEW OF THE LITERATURE

Taken as a whole, research for the past two decades has recognized that alumni giving is a complex phenomenon determined by three sets of variables: college or university characteristics, student characteristics (especially family wealth), and institutional efforts to solicit funds.

During the 1970s and early 1980s research about alumni donations was distinguished by the identification of several important factors. Two studies are

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particularly important in defining the issues that represent the essence of this research. Spaeth and Greeley (1970) identified the income of a student’s parents as critical in explaining their giving as alumni. Leslie (1979) determined that institutional fund-raising expenditures strongly correlated with voluntary support.

Recently, several scholars have analyzed the extent to which the quality of the institution determines alumni generosity. Two studies in particular reflect the flavor of contemporary research. Leslie and Ramey (1988) used both the Gourman ratings and expenditures per student as a measure of institutional quality. Boyle (1990), in a comprehensive analysis of alumni giving, concluded that institutional quality matters.

Boyle’s choice of a dependent variable (alumni giving participation rates) reflected his concern for the “rich-alumni-body” bias. However, the amount an alum chooses to give presumably may depend on variables such as intellectual ability and the quality of the experience in addition to the family wealth of a school’s matriculants. Beyond that, institutions certainly care about the amount given, regardless of the cause of the gift. Technically, our concern, and contribution, involves the exploration of techniques for insuring the estimation of unbiased coefficients for the institutional quality variables in light of a potentially significant correlation between institutional quality and the affluence of its student body. This complication was articulated by Clotfelter et al. (1991, p. 75):

Among those who enroll, there is abundant evidence that average expenditures on college rise with family income. Expensive, highly selective colleges also tend to enroll comparatively affluent students.

Of particular concern is the use of college and university expenditures as a proxy for institutional quality. An endogeneity problem exists if expenditures are both a determinant of and determined by alumni giving. Coefficients that are estimated through use of a structure that does not explicitly recognize this simultaneity may be biased. A methodological approach employed to estimate unbiased coefficients is the subject of the next section of the paper.

2. METHODOLOGICAL APPROACH

A college or university follows a production process in which students with a pre-existing background, ability, and wealth are admitted. The students are then gradually educated, and those who finish the process turn into alumni. The institution then pursues a second process in which alumni giving is created by applying development effort to alumni. The success of that effort will depend in part on the characteristics of entering students, since philanthropy is correlated with variables such as family wealth and a giving tradition, both of which are beyond institutional control.

In addition, the student’s environment is defined by the institution’s curricular and extracurricular characteristics, and that intimate experience affects their giving as alumni in a number of ways. The quality of the education received has an effect on future earning power, and the broad range of experiences within the campus culture establishes the strength of the bond forged between an institution and its graduates.

The ability to increase alumni giving through an intensification of solicitation efforts depends on institutional and student characteristics as well. Alumni are more likely to respond favorably to institutional fund raising efforts if their collegiate experience has been positive, and alumni wealth may well have an effect on how successfully effort can be applied to particular individuals.

The characteristics that define an institution, its students, and its effort at soliciting financial support interact to produce alumni giving. This paper uses a specification that is log-linear, as represented by equation 1, to express the interactive nature of this relationship.

\[ \log (AG_i) = \beta_0 + \beta_1 \log X_i + \beta_2 \log Y_i + \beta_3 \log Z_i + \epsilon_i \]

(1)

where \( AG \) represents alumni giving per alum of record, \( X \) the “quality” of the incoming student, \( Y \) the “quality” of the institution, and \( Z \) the effort the institution makes to solicit alumni giving.

The following section describes the data used to estimate the relationship modeled in equation (1). The empirical results follow.

3. DESCRIPTION OF DATA AND EMPIRICAL RESULTS

We examine a sample of over one hundred twenty-five public and private doctoral-granting research universities, and over two hundred fifty liberal arts colleges for fiscal years 1989 and 1990. The data for
the study come from three main sources. Student characteristics and some institutional characteristics come from Peterson’s Guide to Four-Year Colleges for the years mentioned; data on revenues, expenditures, tuition, and financial aid come from information collected by the Department of Education’s annual Integrated Postsecondary Education Data System (IPEDS) survey; and alumni giving totals and data on alumni of record and development efforts were provided by the Council for Aid to Education (CFAE, 1993b).

The dependent variable used is the log of alumni giving per alumn of record. Both of the alumn’s choice variables, whether to give and how much to give, should be determined by the three interactive factors mentioned above, and scaling by the number of alumni controls for the size of an institution’s potential donor pool.

Three different types of variables are used to represent student characteristics. Demographics, financial information, and student ability are all potentially important in determining how generous students will be as alumni. The percentages of female and minority are included for several reasons. Those groups may have a different experience compared to white males at the same institution; they are likely to earn lower incomes after graduation; and in the case of minorities, are likely to have less of a family history of giving.

Direct measures of student wealth are not available at the institutional level, but some information about student body wealth can be gleaned by considering tuition costs and financial aid statistics. The full tuition cost provides a sense of the wealth necessary to prevent the student from qualifying for aid; the relationship between tuition and wealth is further strengthened to the extent that wealthy families do send their children to more expensive schools, as mentioned above. High tuition alone does not necessarily indicate a wealthier student body, since many students receive some form of financial aid. For a given tuition level, the percentage of the students receiving aid and the average award should both be inversely correlated with student wealth.

Student ability is important for several reasons. Smarter students can expect to earn a greater future income, to receive more benefit from the institution, and will have a positive impact on the education of other students in the same classes. Test scores are not consistently reported by institutions, so the percent-

age of students in the top ten percent of their high school class is used as a measure of ability.

Various measures can be used to identify institutional quality in addition to the quality of incoming students. The percentage of applicants accepted is one way of representing institutional quality, and may also provide another indication of student quality. Spaces at the more selective institutions will be in high demand because of the quality of the education, and will attract better students. Students who are admitted to a more selective institution may also feel a stronger bond because of their inclusion in a select group.

Finally, we use instructional expenditure per student as an additional measure of institutional quality. As noted above, this creates some potential endogeneity problems; higher alumni giving may lead to increased instructional expenditures. The empirical technique chosen controls for the possibility of endogeneity.

There may be institutional characteristics other than quality that help determine the willingness of alumni to donate. Enrollment may matter if the size of the institution affects the quality of the education or the strength of the bond between the alum and their alma mater. Research expenditures per student may affect the real or perceived quality of the education, either positively or negatively. Research may also increase the visibility of the institution and raise alumni consciousness.

While scaling the dependent variable controls for the number of alumni, the number itself depends on both the age of the institution and average enrollment over time. An older institution will have a longer academic tradition and a longer tradition of alumni giving. A variable called “age”, the ratio of alumni of record to current enrollment, is included in the analysis. This variable will be positively correlated with the age of the institution unless enrollment has changed significantly over time. While age is not necessary for academic quality, it does indicate a heritage that may help alumni fit more easily into an existing role. An additional factor to consider is that newer institutions will have relatively young alumni, who on average provide less support.

The third factor of production is institutional fundraising effort. We use the ratio of alumni solicited to alumni of record as a measure of effort. Measures such as development budgets may better describe overall effort, but do not indicate the fraction of the
effort spent on alumni development as compared to other development activities.

The institutions studied vary widely in both their own characteristics and those of their students. Acceptance rates vary between 17% and 99% in the university sample, and between 13% and 100% in the college sample. The percentage of students receiving aid is between 15% and 88%, and 13% and 100% in the university and college samples, respectively. The percentage of students in the top ten percent of their high school classes is between 1% and 88% in the college sample, and tuition ranges were between $0 and $8,757 for public universities, between $3,159 and $15,713 for private universities, and between $482 and $22,800 for colleges.

The first step in estimating the model requires calculating the fitted value of the log of instructional expenditure per student. The endogeneity problem is addressed by using two-stage least squares estimation, first regressing instructional expenditures per student on the major revenue sources (excluding private gifts) and the exogenous variables from the alumni giving equation. The fitted value of the instructional expenditure variable is then used as an independent variable in an ordinary least squares regression on alumni giving. The adjusted $R^2$ from the first stage equation is .823 for the public university sample, .877 for the private universities, and .836 for the college sample.

The variables discussed above are used to estimate the model as described in equation (2).

$$GIFT = \beta_0 + \beta_1 FEM + \beta_2 MIN + \beta_3 TUI + \beta_4 FEL + \beta_5 AID + \beta_6 T10 + \beta_7 ACC + \beta_8 FIT + \beta_9 ENR + \beta_{10} RES + \beta_{11} AGE + \beta_{12} EFF + \varepsilon_i$$

(2)

where:

$GIFT$ = log of the average gift per alum;

$FEM$ = log of the percentage of female students;

$MIN$ = log of the percentage of minority students;

$TUI$ = log of tuition and fees charged;

$FEL$ = log of the scholarship and fellowship per student;

$AID$ = log of the percentage of students receiving financial aid;

$T10$ = log of the percentage of students in the top ten percent of their high school class;

$ACC$ = log of the percentage of applicants accepted;

$FIT$ = log of the fitted value of instructional expenditure per student;

$ENR$ = log of enrollment;

$RES$ = log of research expenditure per student;

$AGE$ = log of the number of alumni of record per student; and

$EFF$ = log of (alumni solicited/alumni of record).

Table 1 presents the results of the estimations of equation (2) for each sample. $T10$ is only used as an explanatory variable in the college sample. Since many universities chose not to report this statistic, including it in the university regressions dramatically reduces the sample size. $RES$ was used only for universities; fewer than half the colleges in the sample reported a figure other than zero.

The mean gift per alum is highest at private universities, lowest at public universities. In all three samples, the median observation for $GIFT$ is slightly greater than the mean. An examination of a scatter diagram indicates that in each sample the most significant outliers are at very low levels of giving; these observations have an extremely low $AGE$ compared to average. There is no reason to believe that extremely high average gifts at a few elite institutions are biasing the results.

The student demographic variables have large, negative and statistically significant coefficients in the public university sample only; the estimated coefficients are smaller and statistically insignificant in the private university and college samples. This finding has several possible explanations. Private universities and colleges may do a better job of creating a bond between these students and the institution. The wealth difference between those female and minority students attending private institutions and those attending public ones may be greater, though this is more plausible with regard to minorities than females. The earnings differential between public and private institutions may be greater for female and minority graduates. The data do not allow us to evaluate these possible hypotheses.

The estimated coefficients for tuition and the fraction of students on financial aid have the predicted signs. The tuition coefficient is largest and most significant in the public university sample, while the
<table>
<thead>
<tr>
<th>Variables</th>
<th>Public University</th>
<th>Private University</th>
<th>Liberal arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted $R^2$</td>
<td>.441</td>
<td>.664</td>
<td>.546</td>
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<tr>
<td>Mean GIFT</td>
<td>3.17</td>
<td>4.48</td>
<td>4.23</td>
</tr>
<tr>
<td>Sample size</td>
<td>143</td>
<td>112</td>
<td>550</td>
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<tr>
<td>Constant</td>
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<td>$-6.28^*$</td>
<td>$-3.67^+$</td>
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<td>($-3.83$)</td>
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<tr>
<td>$\text{FEM}$</td>
<td>$-1.62^*$</td>
<td>$0.34$</td>
<td>$0.12$</td>
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<td>($-2.45$)</td>
<td>($-1.36$)</td>
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<td>($-2.80$)</td>
<td>($-0.70$)</td>
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<td>($2.26$)</td>
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<td>$\text{FEL}$</td>
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<td>($0.07$)</td>
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<td>$\text{AID}$</td>
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<td>($5.73$)</td>
<td>($5.73$)</td>
<td>($5.73$)</td>
<td></td>
</tr>
<tr>
<td>$\text{ACC}$</td>
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<td>($1.50$)</td>
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<td>$\text{RES}$</td>
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<td>$-0.04$</td>
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<td>($1.14$)</td>
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<td>$\text{AGE}$</td>
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<td>$0.50^+$</td>
</tr>
<tr>
<td>($2.03$)</td>
<td>($1.15$)</td>
<td>($2.21$)</td>
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<tr>
<td>$\text{EFF}$</td>
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<td>$1.31^+$</td>
</tr>
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<td>($3.37$)</td>
<td>($2.95$)</td>
<td>($6.61$)</td>
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</table>

All variables enter in their log form. The $t$-statistic appears in parentheses below the estimated coefficient. $^*$ Indicates significance at the 5% level. $^+$ Indicates significance at the 1% level.

The results provide a strong case that student and institution quality matter in determining alumni giving. All three of the quality variables have the predicted sign in each case, and most of the estimated coefficients are statistically significant. Student ability is an extremely important determinant of alumni giving at colleges; a one percent increase in the fraction of students in the top of their high school class creates an estimated four-tenths of one percent increase in gift per alum.

Institutional quality is also important. More selective private universities and colleges receive significantly more alumni giving per alum; the elasticity of average gift with respect to the fraction of applicants admitted is approximately negative one-half. In all three samples, the estimated coefficient on the fitted value for instructional expenditures is positive. The coefficient is statistically significant in the private uni-
versity and college samples. The public university sample has the largest estimated coefficient; while not significantly different from zero, it is also not significantly different from the other estimated coefficients. Institutions that invest more heavily in the instruction of their students receive a greater return from their alumni.

The $AGE$ variable also has a positive and significant estimated coefficient in two of the three samples, as predicted. Enrollment and research expenditures per student do not have a significant impact on the average gift per alum.

The results support previous findings that development effort is a critical part of the fund-raising process. Appeals to alumni are a very important (and highly-rewarded) part of the process, with elasticities near one for universities and exceeding one for colleges. Alumni of colleges respond more generously to solicitation efforts, suggesting a stronger student-institution bond exists at liberal arts colleges than at research universities. 11

In general, the findings bear out the intuition presented in section 2. Higher student wealth, better institutional quality (as measured by student ability, admissions selectivity and instructional expenditures per student), and greater development efforts result in larger gifts per alum. Gifts per alum to public universities are much lower, perhaps because of wealth effects or a belief by resident alumni that they provide sufficient support to the institution through their tax payments.

4. POLICY IMPLICATIONS

Colleges and universities make constrained choices with regard to admissions policy and recruiting efforts, expenditures on instruction, and development efforts. One important factor to consider in making these choices is the impact they will have on alumni giving.

Admissions policy is obviously a crucial determinant of future alumni generosity, since today's students become tomorrow's alumni. The empirical results indicate that, at least at liberal arts colleges, better students are correlated with higher levels of alumni giving. Selectivity is also an important determinant of gifts to private institutions, a fact these institutions must also take into account when considering changes in admissions policy.

The quality of the experience, as measured by the quality of the student body and instructional spending per student, correlates positively with alumni generosity. The experience students have will influence their attitudes toward the institution as alumni. In addition, donations from current alumni are influenced at least in part by the current circumstances of the school. Alumni can be expected to have information about not only what the institution was like when they attended it, but what it is like now, through contact with institutional publications, faculty, development officers, current students, or the various college ratings and guides available.

Institutional quality has many aspects. Each has varying degrees of importance to groups involved with the institution, including students and alumni. As a result, institutional quality characteristics have a set of implicit prices, in terms of the value placed on them by those involved with the institution. One such price is the impact on alumni generosity. Any discussion of optimal institutional quality, or the feasibility of reducing instructional expenditures to address budgetary crises, must include this price in the set of constraints.

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NOTES

1. Voluntary support includes gifts from alumni, non-alumni, corporations, foundations, and religious organizations.
3. All but two of the colleges examined are private.
4. All figures are in nominal dollars.
5. O'Malley (1992) finds that such a family history is an important determinant of an individual's later giving behavior, and also finds that minority students are less likely to have such a background.
6. This is of course an imperfect measure; students probably apply only to those schools that they think
may admit them. The best schools may not have the lowest acceptance rate. Clotfelter et al. (1991) provide a good explanation.

7. This variable only distinguishes between new institutions and old within the limits of alumni lifespan. Clearly it cannot distinguish a one hundred-year-old institution from one which is three hundred years old. We suspect that this difference is less important than the difference between one hundred years and fifteen years.

8. One institution in the sample charged no tuition; the next least expensive public university charged slightly over $3,000.

9. In many liberal arts institutions, research expenditures are negligible as a fraction of the total, and are reported as part of instructional expenditures.

10. The correlations between tuition and selectivity, and between tuition and the fraction of the student body in the top ten percent of their high school class, are very low (less than 0.5 in absolute value).

11. The difference in estimated coefficients is significant when comparing colleges to private universities, but insignificant when comparing public universities to either.

REFERENCES


Council For Aid to Education (1993b) Unpublished data.


