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Patterns of giving to one's alma mater among young graduates from selective institutions

James Monks *

Department of Economics, University of Richmond, Richmond, VA 23173, USA

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Abstract

Despite the importance of alumni generated revenue, the general characteristics and motivation of individuals who are more likely to give to their alma mater are not well known outside of analyses of graduates of particular institutions. This paper examines individual characteristics that are correlated with alumni giving across graduates from 28 institutions in an attempt to identify attributes and experiences of graduates that are more likely to make donations to their alma mater. The objective of this analysis is not simply to determine the current characteristics of an individual that are associated with alumni giving, but rather to identify individual characteristics that may be observable to campus administrators and are correlated with alumni generosity.

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1. Introduction

Many of the nation's top private institutions of higher education rely heavily on non-tuition sources of income to finance their annual operating budgets and capital expenditure. These non-tuition sources of revenue can be from government or foundation sponsored research grants, corporate donations, endowment income, or alumni contributions. The proportion of the non-tuition revenue generated from each of these sources varies significantly across institutions, based on the size and mission of the institution. Across all types of private higher education institutions, however, alumni donations are an important source of revenue. Alumni donations are not just a significant percentage of current income for colleges and universities, but the generosity of past alumni

manifested in endowment wealth also generates substantial income for top-tier private higher education institutions.

All institutions devote substantial time and resources to the 'development' of alumni donations. Despite the resources devoted to alumni generated revenue, the characteristics and motivation of individuals who are more likely to give to their alma mater are not well known, outside of analyses of the graduates from individual institutions. In particular, among graduates of the relatively more expensive, top-tier educational institutions, where alumni donations constitute a substantial portion of institutional revenue [Clotfelter, 2003], the underlying individual characteristics associated with more generous levels of contributions to one's alma mater have not been closely examined [see Brittingham & Pezzello (1990)] for a summary of fundraising results and issues).

Recent existing studies on alumni contributions to their alma mater tend to focus on the charitable behavior

* Tel.: +1 804 794 7678; fax: +1 804 794 7680.

E-mail address: jmonks@richmond.edu (J. Monks).

of graduates of a particular institution [Hueston, 1992; Okunade, 1996; Okunade, Wunnava, & Walsh, 1994; Wunnava & Lauze, 2001] Similarly, Dugan, Mullin, and Siegfried (2000) focus on recent graduates from Vanderbilt University. Their emphasis is on the relationship between undergraduate financial aid and the participation rate and dollar value of donations. They find that receipt of a need-based loan lowers the probability of giving to one's alma mater by 13%. On the other hand, receipt of a need-based grant raises the probability of giving by 12%. Surprisingly, they also find the dollar value of these loans and grants do not have a significant impact on the probability of giving, nor on the dollar amount contributed.

O'Malley (1992) examined overall charitable giving of young alumni from selective institutions. His focus was on the motivational factors of giving, independent from economic conditions. Similarly, using the College and Beyond data set of graduates from selective institutions, Clotfelter (2003) examines two cohorts of students (classes of 1951 and 1976). His paper finds that among the more recent cohort those who received need-based aid tended to give less to their alma mater. This study also concluded that legacies and those who were satisfied with their undergraduate experience tended to make larger donations to their alma mater.

This paper most closely matches the analyses of O'Malley (1992) and Clotfelter (2003), outlined above, in that it too utilizes a survey of graduates of a set of private, highly selective institutions. Additionally, this analysis also focuses on the importance of the undergraduate experience and satisfaction with that experience in determining alumni giving. This study extends the analysis by examining more detailed financial aid data than is available to O'Malley (1992) and Clotfelter (2003) and across a broader set of institutions than those studies mentioned above that only focus on a single institution and whose results may not be generally applicable due to institutional idiosyncrasies. Furthermore, the focus of this analysis is not simply to identify correlates from a survey of alumni with giving, but rather to find variables that are observable to the development offices on campus and can be effectively used to target campaign fund resources.

1.1. Data

The data in this analysis are from a Spring 2000 survey of the graduating class of 1989 at a set of private, highly selective colleges and universities.¹ The alumni

¹ The 28 institutions included in the survey are Amherst, Barnard, Brown, Bryn Mawr, Carleton, Columbia, Cornell, Duke, Georgetown, Johns Hopkins, MIT, Mount Holyoke, Northwestern, Oberlin, Pomona, Princeton, Rice, Smith, Swarthmore, Trinity, University of Chicago, University of

were asked to complete a survey concerning their demographics, undergraduate experience, current activities, and satisfaction with their alma mater. This data set poses two potential problems for this analysis. First, the overall response rate to the survey was only 41%. This ranged across institutions from a low of 25% to a high of 64%, with a median institutional response of 42%. The final data set contained responses from 10,511 individuals. Despite the disappointing overall response rate there do not appear to be any obvious self-selection biases among the respondents (see Table 1 for selected variable means from the alumni survey and from a survey of the class of 1989 taken its senior year).

The second potential difficulty of the data comes from inconsistencies across responses to two questions concerning contributions to one's alma mater. When asked if they made a "dollar contribution beyond dues" in 1999 to their undergraduate alma mater (including alumni association, fundraising, admissions, etc.) 43.8% of the Class of 1989 indicated that they had. Another question in the survey asked, "If you contributed to your undergraduate institution in 1999, how much money did you contribute (for example, annual fund, capital campaign, friends/association groups)? Exclude contributions to national fraternities and sororities." This prompted a dollar amount response from 64.4% of the respondents.² Cross referencing both questions results in 43.2% of the Class of 1989 indicating that they made a dollar contribution to their alma mater and accurately specifying a dollar amount.³ The remainder of this paper will label these individuals as donors to their alma mater in the past year, and all other individuals as non-donors.⁴

Based on the restrictions and definitions outlined above, 43% of the respondents to the alumni survey from the class of 1989 made a positive dollar contribution to their alma mater in 1999. The average alumni donation

_____ Pennsylvania, University of Rochester, Washington University, Wellesley, Wesleyan, Williams, and Yale. The survey was conducted by the Consortium on Financing Higher Education.

² The only choices in the question were positive dollar amounts. Zero dollars or "did not give" were not choices. Individuals who did not make a donation should have skipped the question.

³ It is possible that an individual could have accurately left the first question blank and still provided a dollar amount contributed, if they interpreted the first question to exclude friends/association groups, while the dollar contributed question explicitly includes it. However, conversations with development officers and institutional researchers from some of these institutions suggest that this is not likely in most cases.

⁴ Almost all of the individuals who indicated that they made a donation in the first question, reported a positive dollar amount in the second question, so this cross-referencing of responses appears most accurate. Additionally, the following analyses are qualitatively the same when defining all 64.4% of the respondents who reported a dollar contribution as donors.

Table 1
Selected variable means^b

Variable	Alumni Survey	Senior Survey	Variable	Alumni Survey
Participation rate	43%		Coursework in major	89%
Dollar contribution to alma mater	\$188		Coursework outside major	64%
Individual income	\$78,724		Internships	21%
Household income	\$132,963		Independent study/research	27%
Undergraduate loan amount	\$5,894		Participation in faculty research	9%
Graduate loan amount	\$14,916		Contact w/ faculty outside class	21%
Female	56%	56%	Interaction w/ pre-major advisor	7%
Asian	7%	9%	Interaction with major advisor	23%
African-American	3%	5%	Contact w/ campus staff	20%
Hispanic	2%	3%	Study abroad	22%
Multi-racial	3%	2%	Off-campus study	6%
Married	71%		Student government	8%
US citizen	97%	95%	Intercollegiate athletics	19%
Aid as a major source	37%		Intramural sports	18%
Aid as a minor source	19%		Student publications	8%
Very satisfied w/ UG experience	55%		Performing arts/music	18%
Generally satisfied w/ UG exp.	36%		Political organization/club	10%
Academic honors	43%		Community service	17%
Ph.D.	8%		Fraternity/sorority	19%
Law degree	14%		Religious groups	9%
Medical degree (MD, DDS, DVM)	9%		Residential hall life	39%
MBA	12%		Visiting speakers	16%
Masters degree	24%		On-campus employment	38%
Business and management	6%	5%	Off-campus employment	20%
Communications	2%	1%		
Computer science	2%	2%		
Education	1%	1%		
Engineering	10%	8%		
Fine arts	4%	4%		
History	9%	^a		
Humanities	20%	33%		
Mathematics	3%	3%		
Nursing	1%	1%		
Natural sciences	14%	13%		
Psychology	8%	^a		
Social sciences	24%	26%		
Inter-disciplinary studies	4%	4%		
Other field of study	6%			

^a included in humanities

^b Provided by the Consortium on Financing Higher Education, from the senior survey taken from the class of 1989. The respondents were not linked across surveys, and are meant as benchmarks of the demographic characteristics of the alumni survey

was \$188 across all students, and the average donation among donors was \$434.⁵ Most young alumni either do not give at all or give less than \$200 in a given year. Only approximately 10% give more than \$200 in a given year. Despite these relatively low levels of alumni par-

ticipation and contributions, earlier studies by Lindahl and Winship (1992) and Okunade and Justice (1991) found that past giving behavior is correlated with current and future giving habits.⁶ Identifying young alumni who are more likely to give and encouraging them to do so,

⁵ Average donations were calculated by taking the mid-point of the range marked by the respondent and averaged over all respondents or donors. The top donation response was top-coded at \$32,500.

⁶ In fact, development officers have a series of acronyms to identify alumni giving patterns over time: LYBUNTS (last year but not this year); SYBUNTS (some years but not this year).

even in modest dollar amounts, may have significant life-time giving effects.

Included among the explanatory variables are measures of the graduate's financial profile, advanced degree attainment, the dollar amount of student loans, race, marital status, number of children, financial aid status as an undergraduate, academic honors, satisfaction with undergraduate experience, and major field of study. Additionally, a set of dummy variables capturing participation in various academic and extra-curricular activities are also included among the regressors to identify individuals whose undergraduate experiences make them more likely to make a generous contribution to their alma mater.

2. The model

The statistical specification of the relationship of undergraduate experiences and alumni characteristics to donations to one's alma mater is:

$$\begin{aligned}
 Y^* &= X\beta + \varepsilon \\
 Y &= 0 \text{ if } Y^* \leq 0 \\
 Y &= Y^* \text{ if } Y^* > 0
 \end{aligned} \tag{1}$$

Y^* is a latent variable of the natural log of an individual's contribution to their alma mater. X is a vector of variables that reflect the individual's undergraduate experiences, perceptions of administration's priorities, sources of undergraduate financing, advanced degree attainment, current individual and household income, and overall satisfaction with their undergraduate education.

The use of ordinary least squares is inappropriate in this case, due to the left censoring of the dependent variable. This equation is estimated using a Tobit maximum likelihood technique. The log-likelihood function to be estimated is:

$$\begin{aligned}
 \ln L = \sum_{y_i > 0} & -1/2[\log(2\pi) + \log\sigma^2 + (y_i \\
 & - X_i\beta)^2/\sigma^2] + \sum_{y_i = 0} \log[-\Phi(X_i\beta/\sigma)].
 \end{aligned} \tag{2}$$

The coefficients in this model represent the impact of that dummy variable or a one unit change in a continuous regressor on the latent variable. The impact of each regressor on the censored value of alumni giving, or the slope effect, is found by taking the exponential function of the product of the estimated coefficient from Eq. (2) and the probability of giving.

3. Regression results

The following analysis uses the Tobit maximum likelihood estimation to investigate the relationships between individual and institutional attributes and alumni giving, holding all other observable characteristics constant, including institutional fixed effects.⁷

A consistent result across all analyses is the link between individual income and household income and the dollar contributions to one's alma mater (see Table 2).⁸ An increase in individual income of \$10,000 raises the expected contribution by approximately 2%.⁹ Similarly, an increase in household income of \$10,000 raises the expected contribution by approximately 9%. For example, an increase in household income from \$130,000 to \$140,000 raises the expected contribution by 9%, from \$188 to \$205.

Similarly, while a simple examination of average giving across sex found that women donated significantly less to their almas maters, conditionally there are no significant differences in average donations across sex.¹⁰ This result is consistent with Clotfelter (2003), who found no statistically significant difference in average contributions across gender, but is in contrast to the findings of Eckel and Grossman (1998) who found that women are more likely to make more generous charitable contributions. Additionally, blacks, multi-racial respondents, married individuals, and non-US citizens donate significantly less to their undergraduate institutions than otherwise comparable alumni/ae. These results are also consistent with Clotfelter's findings from the College and Beyond data for the class of 1976 in 1995.

The most significant determinant of alumni giving levels is the individual's satisfaction with his or her under-

⁷ The following censored regressions were also performed assuming the error terms followed a logistic, Weibull, or gamma distribution. The results are qualitatively the same as those presented here assuming the error is normally distributed. Results are available from the author upon request.

⁸ Only variables whose coefficients are statistically significant at the 10 percent level are bolded.

⁹ The dependent variable is the natural log of the dollar value of contributions, so the derivative of the expected value of the natural log of giving with respect to this regressor is $\exp(0.0414 \cdot .432) = 1.02$. So a \$10,000 increase in own income increases giving by 1.02 times or 2%.

¹⁰ Also included among the regressors, but not shown, are dummy variables for missing values for gender, number of children, race, household and individual income, undergraduate and graduate loans. Also included among the regressors but not shown are institution dummy variables, and a variable indicating that the respondent knew they had an undergraduate loan but did not know the dollar value of the loan. Dropping observations with missing values does not qualitatively alter the results.

Table 2

Tobit analysis of alumni giving dependent variable=\$ contribution to one's alma mater (includes additional measures of alumni satisfaction with administration)

Variable	Estimate	Slope	Standard error	Chi-square	Pr>chi
Intercept	-3.3367		0.4627	52.0087	0.0001
Own income (\$10,000)	0.0386	1.02	0.0179	4.6181	0.0316
Own Income-Squared	-0.0001	1.00	0.0004	0.0558	0.8132
Household income (\$10,000)	0.1942	1.09	0.0187	107.9285	0.0001
Household income-squared	-0.0028	1.00	0.0004	56.3264	0.0001
Undergraduate loan levels (\$1000)	-0.0265	0.99	0.0082	10.4176	0.0012
Graduate loan levels	-0.0087	1.00	0.0021	16.7039	0.0001
Female	0.1414	1.06	0.1016	1.9384	0.1638
Asian	-0.2576	0.89	0.1689	2.3255	0.1273
Black	-0.8055	0.71	0.2718	8.7850	0.0030
Hispanic	-0.4280	0.83	0.3440	1.5476	0.2135
Multi-racial	-0.4907	0.81	0.2535	3.7479	0.0529
US citizen	1.7275	2.11	0.3108	30.8961	0.0001
Married	-0.3899	0.84	0.1198	10.5979	0.0011
Number of children	0.0527	1.02	0.0539	0.9555	0.3283
Aid as a major source	0.1175	1.05	0.1389	0.7163	0.3973
Aid as a minor source	-0.0069	1.00	0.1261	0.0030	0.9564
Very satisfied w/ UG experience	2.2202	2.61	0.1819	149.0565	0.0001
Generally satisfied	1.3885	1.82	0.1813	58.6603	0.0001
Honors	-0.1044	0.96	0.0920	1.2877	0.2565
Ph.D.	-0.1292	0.95	0.1736	0.5538	0.4568
Law degree	0.2848	1.13	0.1478	3.7113	0.0540
Medical degree (MD, DVM, DVS)	-0.0683	0.97	0.1892	0.1301	0.7183
Masters degree	0.0539	1.02	0.1185	0.2070	0.6491
MBA	0.4765	1.23	0.1437	10.9946	0.0009
Student government	0.6484	1.32	0.1554	17.4042	0.0001
Intercollegiate athletics	0.6200	1.31	0.1075	33.2496	0.0001
Intramural sports	-0.0109	1.00	0.1145	0.0090	0.9243
Student publications	0.1161	1.05	0.1552	0.5591	0.4546
Performing arts/music	0.2824	1.13	0.1121	6.3476	0.0118
Political organization/club	-0.4017	0.84	0.1464	7.5251	0.0061
Community service	0.1530	1.07	0.1158	1.7455	0.1864
Fraternity/sorority	0.6418	1.32	0.1155	30.8872	0.0001
Religious groups	0.2956	1.14	0.1465	4.0738	0.0436
Residential hall life	0.3792	1.18	0.0897	17.8826	0.0001
Visiting speakers	-0.1629	0.93	0.1196	1.8541	0.1733
Coursework in major	-0.1691	0.93	0.1452	1.3562	0.2442
Coursework outside major	0.1243	1.06	0.0918	1.8331	0.1758
Internships	0.3198	1.15	0.1064	9.0410	0.0026
Independent study/research	-0.2403	0.90	0.1084	4.9108	0.0267
Participation in faculty research	0.1376	1.06	0.1636	0.7071	0.4004
Contact w/ faculty outside class	0.2880	1.13	0.1144	6.3362	0.0118
Interaction w/ pre-major advisor	-0.1126	0.95	0.1712	0.4323	0.5109
Interaction with major advisor	0.1960	1.09	0.1131	3.0062	0.0829
Contact w/ campus staff	0.2173	1.10	0.1093	3.9490	0.0469
Study abroad	-0.0166	0.99	0.1080	0.0237	0.8776
Off-campus study	-0.0570	0.98	0.1831	0.0970	0.7554
On-campus employment	0.0901	1.04	0.0985	0.8371	0.3602
Off-campus employment	-0.1228	0.95	0.1097	1.2551	0.2626
Business and management	0.2989	1.14	0.2082	2.0614	0.1511
Communications	0.0070	1.00	0.3308	0.0004	0.9831
Computer science	-0.2288	0.91	0.3393	0.4546	0.5001
Education	-0.1253	0.95	0.4722	0.0704	0.7907

(continued on next page)

Table 2 (continued)

Variable	Estimate	Slope	Standard error	Chi-square	Pr>chi
Engineering	0.2337	1.11	0.1822	1.6443	0.1997
Fine arts	-0.4870	0.81	0.2344	4.3178	0.0377
History	0.4153	1.20	0.1591	6.8182	0.0090
Mathematics	0.3140	1.15	0.2556	1.5089	0.2193
Nursing	-1.2577	0.58	0.6658	3.5680	0.0589
Natural sciences	-0.2266	0.91	0.1651	1.8822	0.1701
Psychology	0.0802	1.04	0.1691	0.2248	0.6354
Social sciences	0.1248	1.06	0.1203	1.0760	0.2996
Inter-disciplinary studies	0.0658	1.03	0.2234	0.0867	0.7684
Other field of study	-0.2804	0.89	0.1956	2.0552	0.1517
Over or Under Emphasis on:					
Faculty research	-0.2378	0.90	0.1074	4.8991	0.0269
Undergraduate teaching	-0.3335	0.87	0.1236	7.2852	0.0070
Broad liberal arts education	-0.1797	0.93	0.1447	1.5425	0.2142
Intercollegiate athletics	-0.1995	0.92	0.1175	2.8852	0.0894
Extra-curricular activities	0.2522	1.12	0.1235	4.1706	0.0411
Intellectual freedom	-0.0156	0.99	0.1260	0.0154	0.9013
Racially diverse student body	-0.3120	0.87	0.1059	8.6721	0.0032
Residential life	0.0883	1.04	0.1098	0.6464	0.4214
Skills valuable in workforce	-0.1201	0.95	0.1001	1.4373	0.2306
Moral development	-0.0035	1.00	0.1051	0.0011	0.9735
Need based financial aid	-0.4523	0.82	0.1088	17.2845	0.0001
Merit aid (based on academics)	0.2849	1.13	0.1060	7.2180	0.0072
Alumni/ae concerns	-0.8173	0.70	0.1057	59.7440	0.0001
Scale	3.6447		0.0441		

graduate experience. Respondents who reported that they are “very satisfied” with their undergraduate experience gave over 2.6 times as much to their alma mater as graduates who were “ambivalent,” “generally dissatisfied,” or “very dissatisfied.” Similarly, graduates who were “generally satisfied” gave over 1.8 times as much to their alma mater. To examine the individual characteristics and undergraduate experiences that are correlated with satisfaction a logit regression analysis was performed (see Table 3.) The odds ratio show the probability that individuals with that characteristic would report being “very satisfied” relative to someone without that characteristic. For example, the probability of someone with honors being satisfied is 56%, while someone without honors is 44%, *ceteris paribus*. The probability of someone with honors reporting being very satisfied is 1.29 (0.55/0.44) times the probability of someone without honors reporting being very satisfied with their undergraduate education.¹¹

Graduates with a MBA or a law degree had higher

average donations than those without an advanced degree. Interestingly, graduates with a Ph.D. did not give significantly more to their alma mater.

The results appear to offer some support of the hypothesis that recipients of financial aid are more likely to make donations to their alma mater. Alumni/ae who reported financial aid from their institution as a major source of funding had average donations that were 5% higher than alumni who reported that financial aid was not a source (or did not know), although this result is not statistically significant at conventional levels. On the other hand, both undergraduate (and to a lesser degree) graduate, loans have a dampening effect on alumni giving levels. These findings are consistent with the recent study by Dugan et al. (2000) of Vanderbilt University graduates that found a positive effect of grant aid and a negative effect of loans on giving rates.

Why individuals with higher loan levels report lower levels of alumni giving is unclear. It may be that they view making student loan payments as still paying for their college education, and are therefore reluctant to make an ‘additional’ donation directly to their alma mater. On the other hand, the negative effect of student loans on giving may be reflecting lower levels of individual or familial wealth, and thus a lower ability to make a generous donation.

¹¹ The results are qualitatively similar using a probit estimation. The logit was chosen for a more direct comparison with Clotfelter (2003).

Table 3

Logit regression of satisfaction; Class of 1989. Dependent variable. Equal to 1 if 'very satisfied'; zero otherwise

Variable	Estimate	Odds ratio	Standard error	Chi-square	Pr>chi
Intercept	-1.0446		0.2082	25.1640	0.0001
Own income (\$10,000)	0.0241	1.02	0.0093	6.7277	0.0095
Own income-squared	-0.0003	1.00	0.0002	2.7260	0.0987
Household income (\$10,000)	0.0215	1.02	0.0095	5.1464	0.0233
Household income-Squared	-0.0003	1.00	0.0002	3.1217	0.0773
Undergrad loan levels (\$1000)	-0.0084	0.99	0.0041	4.2660	0.0389
Graduate loan levels	-0.0009	1.00	0.0011	0.6564	0.4178
Female	0.0885	1.09	0.0506	3.0517	0.0807
Asian	-0.4872	0.61	0.0839	33.7087	0.0001
Black	-0.3999	0.67	0.1304	9.3991	0.0022
Hispanic	-0.2072	0.81	0.1660	1.5573	0.2121
Multi-racial	-0.2382	0.79	0.1234	3.7241	0.0536
US citizen	-0.0301	0.97	0.1394	0.0467	0.8288
Married	-0.0311	0.97	0.0596	0.2716	0.6023
Number of children	0.0656	1.07	0.0272	5.8383	0.0157
Aid as a major source	0.2068	1.23	0.0690	8.9982	0.0027
Aid as a minor source	-0.0756	0.93	0.0633	1.4281	0.2321
Honors	0.2543	1.29	0.0461	30.4495	0.0001
Ph.D.	0.3547	1.43	0.0882	16.1839	0.0001
Law degree	0.5017	1.65	0.0769	42.6077	0.0001
Medical degree (MD, DVM, DVS)	0.6832	1.98	0.0978	48.7873	0.0001
Masters degree	0.1652	1.18	0.0583	8.0186	0.0046
MBA	0.1401	1.15	0.0740	3.5828	0.0584
Student government	0.0972	1.10	0.0844	1.3255	0.2496
Intercollegiate athletics	0.0763	1.08	0.0566	1.8165	0.1777
Intramural sports	0.1315	1.14	0.0593	4.9188	0.0266
Student publications	0.0309	1.03	0.0805	0.1471	0.7013
Performing arts/music	0.0651	1.07	0.0578	1.2671	0.2603
Political organization/club	-0.0348	0.97	0.0737	0.2225	0.6371
Community service	-0.0401	0.96	0.0591	0.4602	0.4975
Fraternity/sorority	0.0855	1.09	0.0583	2.1519	0.1424
Religious groups	-0.0638	0.94	0.0747	0.7282	0.3935
Residential hall life	0.3610	1.43	0.0455	62.9828	0.0001
Visiting speakers	0.0372	1.04	0.0615	0.3665	0.5449
Coursework in major	0.4124	1.51	0.0715	33.2338	0.0001
Coursework outside major	0.2784	1.32	0.0454	37.5569	0.0001
Internships	0.0825	1.09	0.0543	2.3022	0.1292
Independent study/research	0.0487	1.05	0.0554	0.7711	0.3799
Participation in faculty research	0.0432	1.04	0.0851	0.2576	0.6118
Contact w/ faculty outside class	0.4659	1.59	0.0606	59.0250	0.0001
Interaction w/ pre-major advisor	0.1915	1.21	0.0927	4.2634	0.0389
Interaction with major advisor	0.3014	1.35	0.0593	25.8485	0.0001
Contact w/ campus staff	0.1621	1.18	0.0568	8.1387	0.0043
Study abroad	-0.0822	0.92	0.0552	2.2150	0.1367
Off-campus study	-0.1295	0.88	0.0932	1.9330	0.1644
On-campus employment	-0.1100	0.90	0.0495	4.9264	0.0264
Off-campus employment	-0.1988	0.82	0.0546	13.2607	0.0003
Business and management	0.1790	1.20	0.1035	2.9915	0.0837
Communications	0.2147	1.24	0.1543	1.9362	0.1641
Computer science	0.2533	1.29	0.1707	2.2020	0.1378
Education	-0.1150	0.89	0.2284	0.2537	0.6145
Engineering	0.0864	1.09	0.0904	0.9140	0.3390

(continued on next page)

Table 3 (continued)

Variable	Estimate	Odds ratio	Standard error	Chi-square	Pr>chi
Fine arts	0.1294	1.14	0.1157	1.2515	0.2633
History	0.1049	1.11	0.0824	1.6207	0.2030
Mathematics	0.1026	1.11	0.1331	0.5946	0.4407
Nursing	0.4612	1.59	0.2891	2.5455	0.1106
Natural sciences	-0.0051	0.99	0.0833	0.0037	0.9514
Psychology	0.0598	1.06	0.0861	0.4819	0.4876
Social sciences	0.1290	1.14	0.0617	4.3749	0.0365
Inter-disciplinary studies	-0.0350	0.97	0.1141	0.0940	0.7592
Other field of study	0.0866	1.09	0.0955	0.8212	0.3648

A number of extracurricular activities are correlated with alumni giving. Active participation in student government, intercollegiate athletics, performing arts/music, fraternities or sororities, religious groups, or resident hall life are all correlated with greater levels of alumni giving.¹² On the other hand, individuals who actively participated in political organizations or clubs made smaller donations on average than those who did not participate in extracurricular activities.

Similarly, there are a handful of academic experiences that are correlated with alumni giving. For example, graduates who indicated that they had a high level of involvement in an internship, contact with faculty outside of class, contact with their major advisor, or contact with campus staff made higher average donations than those without these academic experiences. On the other hand, individuals who were involved in independent study or research made significantly lower average donations to their alma mater.¹³

These results are not just the product of differences in rates of involvement in academic and extracurricular activities across institutions. These results are conditional on institution fixed effects and are thus within institution effects, such that individuals more involved in these activities at an institution are more likely to make a donation than otherwise comparable individuals at the same institution.

It is interesting to note that even conditional on income, advanced degree attainment, and overall satisfaction with one's undergraduate experience, the major field of study is a significant determinant of alumni giving. Specifically, graduates with a major in fine arts or

nursing give significantly less, while history majors give significantly more than humanities majors.

There are a number of areas where alumni dissatisfaction with the institution's current emphasis on an issue affects the giving behavior of the alumni.¹⁴ In particular, alumni giving is influenced by dissatisfaction with the emphasis (or lack thereof) on faculty research, undergraduate teaching, intercollegiate athletics, extra-curricular activities, a racially diverse student body, need-based financial aid, merit aid, and of course alumni/ae concerns. Clearly, alumni giving is not just motivated by their undergraduate experiences, but also by their feelings about the current state of the institution.

Finally, I eliminate all variables that reflect alumni satisfaction and individual attributes that are likely to be unobservable by the campus development office. The remaining regressors represent individual characteristics that are or may be observable by the alumni office, such as undergraduate activities and demographic traits.¹⁵ This model is most useful in attempting to identify individuals that may be generous contributors to their alma mater, or not.

Similar to the preceding results, individuals with undergraduate loans give less to their alma mater than graduates without student loans. Students with the typical full loan burden under the Guaranteed Student Loan Program in 1989 graduated \$10,000 in debt. Students with this level of undergraduate debt had average giving that was 10% lower than those without any student loans. As approximately 67% of the respondents attained some form of an advanced degree, it is likely that many of the

¹² An individual is defined as having actively participated in an activity if they indicated a level of involvement of 1 (very high) out of 5 (none).

¹³ This result is most likely largely offset by the increased likelihood of giving associated with significant contact with faculty outside of the classroom that is often linked with independent study.

¹⁴ An alumnus is defined as being dissatisfied with the institution's current emphasis if his or her rating of what the emphasis should be differs by 2 or more (out of a 5 point scale) from his or her rating of what the institution's current emphasis actually is.

¹⁵ The results are not shown, but are available from the author upon request.

graduates were still making payments on their undergraduate loans.

A number of individual demographic characteristics continue to be correlated with alumni giving. United States citizens are over two times more generous to their alma mater than non-US citizens. Blacks, Hispanics, and individuals from multi-racial/ethnic groups give 39, 23, and 27 percent less than whites to their undergraduate alma mater, respectively. Married individuals give 18% more than their single counterparts.¹⁶ These demographic characteristics are no doubt highly correlated with individual and household income and thus serving, in part, as proxies for the family financial profile.

Receipt of institutional financial aid as a source of funding does not appear to have significant predictive power in determining alumni generosity.

Individuals with an MBA or law degree are significantly more likely to give to their alma mater than individuals without an advanced degree. In particular, the average donation of MBA holders is 57% higher than the average donation of those without an advanced degree. Similarly, the average donation of those with a law degree is 22% more than the average donation of those without an advanced degree.

The undergraduate extracurricular and academic experiences that were found to be significantly correlated with alumni giving in Table 2 continue to be significantly correlated with alumni giving in this specification, as well.

As expected, graduates with degrees from those undergraduate majors which are usually associated with higher post-graduation earnings have higher average donations than graduates who majored in less lucrative fields. Specifically, graduates who majored in business and management, engineering, history, mathematics, and the social sciences had higher average earnings than graduates who majored in the humanities. On the other hand, graduates with degrees in the fine arts gave significantly less than humanities majors.

4. Conclusion

The common practice of canvassing the entire alumni population with solicitations for donations may be an inefficient use of scarce development office resources. This analysis identifies individual characteristics that are correlated with alumni giving. Sorting alumni classes by characteristics that are sometimes observable to the development office may provide a more targeted and effective strategy for raising alumni contributions. For

example, limiting the sample to the top decile of alumni/ae as predicted from the reduced form regression resulted in an average giving of \$552, versus the bottom predicted decile with average giving of only \$52. If the additional costs to pursue the bottom 10% of the alumni/ae is greater than \$52 per alumnus/a (including additional personnel, office space, and direct solicitation expenses), then the returns are not warranted. While the data do not allow for the estimation of the incremental effect of increased development resources on giving from various groups, identifying those groups of individuals with higher levels of average giving provides development officers with important information concerning how best to focus their limited resources and time.

The single biggest determinant of the generosity of alumni donations is satisfaction with one's undergraduate experience. In an attempt to better target alumni/ae who are more likely to make more generous donations, institutions could identify those students upon graduation for whom the past four (or more) years met or exceeded expectations. This information could be used to focus development office resources to those who are most likely to make donations to their undergraduate institution.

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¹⁶ In the event that a significant percentage of alumni/ae are married to their classmates, married individuals may in fact give less to their alma mater than single individuals.

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