The Effect of University Endowment Growth on Giving: Is there evidence of crowding out?*

Sharon M. Oster
Frederic D. Wolfe Professor of Management and Entrepreneurship
Professor of Economics

Yale School of Management

February, 2001

Paper Prepared for Cornell Research Conference
"Financing Higher Education Institutions in the 21st Century"
May, 2001

*Research assistance was provided by Jennifer Holleran. I am greateful for suggestions provided by Ray Fair.

The extraordinary performance in the U.S. stock market in the latter half of the 1990's has produced record gains in university endowments. In 1998, for example, the five hundred colleges and universities followed by the Chronicle of Higher Education earned average returns of 18%; in 1999, the figure was down slightly at 11%, but still substantial relative to historical norms. (Chronicle, 8/24/2000). These gains have stimulated considerable discussion on university finances, including debates on spending rates, tuition levels, faculty compensation and the like. Hansmann (1998), for example, argues that, in the face of these extraordinary returns, university spending rates are far too low and, indeed, that universities are behaving as if their central object is to run investment funds, while operating academic programs on the side. Similarly, Altshuler (2000) argues for using endowment gains for increased spending on academic programs and faculty salaries as a way to turn financial capital into intellectual capital for the university. At some universities, these endowment gains have created pressures for moderation in tuition increases; Williams in 2000 held tuition constant in response to their positive endowment gains. (Wilgren, 2000). In recent months, Princeton University has announced plans to convert student loans into outright grants.

This paper considers another issue associated with the recent endowment growth: Has this extraordinary growth dampened donor interest in new giving? Do we see the kind of "crowding out" that some have found in government giving to other nonprofit organizations? (See, for example, Kingma, 1989; Steinberg, 1984). With market returns on endowments of 15-20%, donors might well believe universities no longer need their money. Indeed, there is some indication that Harvard worried about just such an effect in its recent capital campaign. Susan Feagin, former vice-president of development at Harvard, indicated, "there was a lot of concern for how a $2 billion campaign would be perceived. Would it look greedy?"(Quoted in

Pulley, 1999). To the extent that high endowment levels induce a form of self-correcting restraint on the part of donors, the argument in favor of new spending initiatives is reduced.

A first cut look at the aggregate time series data seems to run counter to the crowding out hypothesis. Gifts to universities have grown rapidly in the latter part of the nineties, paralleling the endowment growth. The total giving to colleges and universities in 1998-99 was twice that reported in 1990-91. (Lively, 2000). Post 1995, aggregate giving increased by double digits every year. (Lively, 2000). A simple comparison of endowment growth and portfolio performance, however, can be quite misleading. The same stock market growth responsible for healthy returns on university endowments improved the portfolios of potential donors during this period. Richer alumni naturally donate more to their alma maters. The right question for us to ask in assessing the crowding out effect is a marginal one: holding donor wealth constant, what is the effect of growing endowments on giving behavior? The aggregate time series data simply do not let us sort out the effect of donor wealth growth from endowment growth. This paper instead relies on cross sectional data to try to disentangle the donor wealth growth from endowment growth. In any given year, universities experience quite substantial differences in portfolio performance. In 1999, for example, the Princeton endowment grew by almost 16%, while Emory's actually fell by 12%. (Chronicle, 2/18/2000). At the same time, there is no a priori reason to expect that donors to Princeton and Emory experienced radically different returns on their personal investments. Thus, in theory at least, it should be possible to use university differences in portfolio performance to examine potential crowding out.

Earlier work on the crowding out effect has focused on the effect of government spending on contributions, looking at a variety of different nonprofit organizations. What happens to the level of private contributions as government increases its funding of nonprofits? Or, in a more

modern context, will private donations make up for cut backs in government funding? In this context, prior literature has found relatively modest crowding out effects (Steinberg, 1987; Roberts, 1984; Kingma, 1989). A recent study of the interrelationship of donations and commercial revenue using a fixed effects model finds no crowding out in the university setting; indeed, in this industry, the two revenue sources appear to be complementary. (Segal and Weisbrod, 1998). That is, for universities, donations and commercial revenue appear to move together. On the other hand, one might well expect that potential donors would be more aware of endowment growth than they are of commercial revenue, giving rise to stronger crowding out effects from this avenue.

Prior work on crowding out traces the effect of new revenue sources on aggregate donations. In the case of universities, we may see a subtler, compositional effect: endowment growth may affect the kinds of donations made. University donations come in a range of forms, large and small, from varied sources, carrying greater or fewer restrictions. In 1998 in a sample of colleges the Council for Advancement and Support of Education found that 57% of the donations raised came from just one percent of donors. (Pulley, 1999). Approximately 30% of the college and university donations come from alumni, and another 25% from other individuals, with the remainder coming from foundations and corporations. (Chronicle, 5/5/2000). It is likely that endowment growth will affect these different levels and types of donors differently. In 1999, roughly 88% of the donations to the colleges and universities tracked by the Council for Aid to Education (CAE) were restricted. In the last decade, an increasing share of gifts to educational institutions has been restricted. Restrictions on the use of donations can have substantial effects on a university's ability to move in directions favored by a current administration and any tendency for such restrictions to rise are potentially problematic from the

point of view of the university managers. Large restricted donations leave universities especially vulnerable. In this paper, I explore the changes in the balance of restricted and unrestricted funds, and the composition of donors, using both cross sectional and time series variation to see if there is any effect from endowment growth.

1. The Model

Donor Behavior

We begin with a simple utility maximizing model of donor behavior, as below, similar to the model used in a range of earlier work. (See, for example Steinberg, 1987).

$$U_i = U\,(C_i, D_i, S_I \ldots S_n)$$

Where U_i is the utility of donor i, and depends on private consumption, C_i, D_i, *the* contributions from donor i, and a vector of services , *S*, provided by the nonprofit to which the donor is contributing. The S's represent the "public good" piece of university programs. In contrast to earlier work, I have modeled this as a vector of goods, to enable us to think about differences in donor preferences around the various services of the university. Some donors, for example, might put a high value on academics, while others are more interested in athletics. All of the components of the vector are public goods, but the marginal utility of each component might well vary to the individual.

As we see , in this specification, donations are motivated by both private and public goods concerns. In the first instance, donors get direct utility from their own private donations, gains which Andreoni (1990) refer to as the "warm glow effect." On the other hand, donors also recognize that the university can use their contributions to create a stream of public services, which are themselves valued by those donors. Those

services, $S_1 \ldots S_n$, *are* produced by the university using three sources of funds: donations, tuition revenue and endowment income. In this respect, donations substitute in production for donations of others as well as for income from endowments and other sources. As Andreoni (1990) and others have suggested, the stronger the direct private good gains from donations, the first element in the utility function, the less strong will be the crowding out effect . Indeed, as Steinberg points out, donations may act as complements to other revenue sources in their private guise, if the warmth of the glow from giving increases with the scope and depth of the university. (Steinberg,1987). It is in the production of the *S* vector that we see the potential for crowding out. [1] In this production function, donations and endowment serve as substitutes, and we should expect endowment growth to "crowd out" donations, at least at some level.

The specification above also suggests a potential compositional effect from endowment growth. Two effects are likely. On the one hand, donors may vary in the relative public/private source of their utility from giving. For example, one might well expect board members to exhibit strong "warm-glow" effects , and thus show relatively little crowding out relative to other donor types. On the other hand, donors who impose restrictions on their gifts may be more production oriented and thus more easily crowded out than more general purpose donors. Even donors who are principally interested in the production side may differ in their response to other revenue growth, depending on how substitutable they think general university funds are for their donations. A donor who wished to build Yale University another world-class squash facility might well believe that absent his or her funds, no university funding would go towards this purpose. For this donor, though the focus of the charitable interests is on the production of

[1] For this paper, I have ignored the effect of commercial revenue on donations. But, see ,Segal and Weisbrod, 1998.

university services, the esoteric focus of the charitable interest would likely reduce crowding out. Corporations and foundations, who often have a more well specified *quid pro quo*, may in fact exhibit less crowding out, given likely lower elasticity of substitution between their funds and other university support. We will explore some of these compositional differences as well in the empirical work in this paper.

The University Side: Administrators and Fund Raisers

The simple utility maximizing model of donations treats the fund raisers of the university as passive agents. For example, a simple model might assume a development office with a constant marginal cost of solicitation, which then drives development effort until the marginal revenue from that effort equals its marginal cost. In this kind of model, all of the action essentially results from the shifting of the Marginal Revenue Product curve. Here, in doing empirical work, one can simply focus on the factors which enter the utility function of the donors, and shift the Marginal Revenue curve.

In the context of university fund raising , however, there is another plausible view. While all universities and colleges have dedicated development offices, fund raising also occupies the time and energy of senior administrators, particularly the President. These administrators, of course, have many demands on their time. For a university president, time spent on development clearly competes with time for faculty development, strategic thinking, and even student relations. In this sense, increases in university financial resources, coming, for example, from endowment growth, might well change the allocation of time of these higher-level administrators. In this instance, we would expect a kind of crowding out, not now from donor behavior, but from the

development side. Any such effect will reinforce the crowding out effects we see from the donor side.

Again, identifying this source of crowding out from the aggregate time series data would be difficult. As potential donors become richer, the expected return from soliciting those donors also increases. This effect would, of course, increase development effort. And, indeed, the casual evidence indicates some increase in development efforts in the last decade. (See David Morgan, CAE, quoted in The Chronicle, 5/5/2000). Again, the real issue is a marginal one: holding donor wealth constant, does endowment growth discourage development efforts? In some ways we are asking whether the supply of development activity is "backward-bending."

One might also see compositional effects operating from this side of the market. To the extent that there is some cutback in development effort, presumably it is the lowest return efforts, which are abandoned. These abandoned prospects may well look quite different from the remaining pool. We will also explore this effect.

2. The Data

Sources:

The data on charitable giving for universities and colleges used in this paper come from the Voluntary Support of Education (VSE) Survey program developed by the Council for Aid to Education (CAE). The CAE, an affiliate of the Rand Corporation, collects data annually from a large sample of colleges and universities, as well as a number of independent schools. In 1999, the sample consisted of 938 higher education respondents, including both two and four year institutions. The data are self-reported, and include a quite

detailed range of both source and type of gift. Data are also collected on both enrollment levels and the market value of endowment. The first empirical work in this paper uses the responses of four-year colleges and universities in the 1999 data set.

The VSE data are also available for a time series of colleges and universities, beginning in 1980. This large data set includes somewhat different categories of giving than the 1999 data, and many colleges do not have a full set of data, with some joining the survey late and others dropping off. Nevertheless, this is a very rich data set and the second part of the empirical work is based on this panel data.

The Aggregate Picture

Before we turn to the empirical work, it is useful to look briefly at the overall picture of college giving provided in the VSE data. Figure 1 describes the trends in voluntary support per student in the 1980-1999 periods for the VSE sample for four-year institutions. While these gifts have increased in current dollars over the whole period, most of the growth has actually been in the very recent period. Indeed, in the latter part of the 1980's and through the early 1990's, constant dollar contributions per capita fell slightly. This pattern is consistent with the common view that much of the recent growth is stock-market driven, rather than a reflection of a more fundamental taste change on the part of donors. It also suggests that the search for any possible crowding out effects is likely to be most revealing in the very recent period.

Figure 1 Per Capita Giving Trends 1980-99

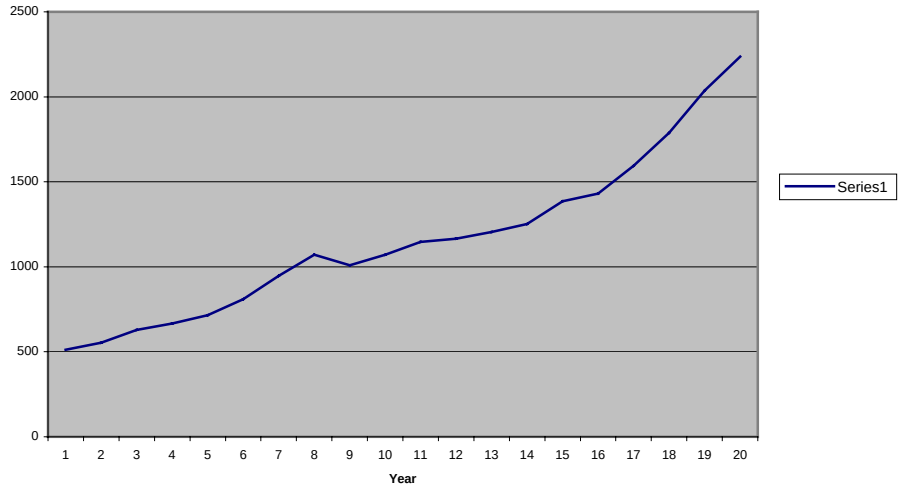

Table 1 provides some detail for the full VSE sample of four-year colleges and universities on the composition of the 1999 gifts. The largest source of funds is alumni giving, followed by nonalumni individual giving. Gifts are more or less equally split between capital and current operations, and the share of unrestricted giving is relatively low.

Table 1: Sources of Gifts: 1999

Sources	Percent
Alumni	29
Non alumni	24
Corporation	18
Foundation	22
Religious Organization	2
Other Organization	6
Purposes	
Current Operations	48.5
Capital Purposes	51.5
Type	
Restricted	87.6
Unrestricted	12.4

Source: 1999 Voluntary Support of Education pp. 3, 13. C.A.E.

3. The Empirical Results

Overall Giving

The first question this analysis addresses is whether university giving is negatively affected by endowment growth: Is there crowding out ? We begin by looking at the 1999 data.

There are two strands of prior literature looking at the determinants of university giving. A number of articles, including most recently Rhoads and Gerkins (2000) have focused on the role of athletic success in spurring contributions. (Other examples of this work include Brooker and Klastorin, 1981; Coughlin and Erekson, 1984). In general, these studies find modest responses to athletic successes, with some variance among various donors.

Recent work by Segal and Weisbrod (1998) is also relevant. The central question addressed by Segal and Weisbrod is whether commercial revenues are crowded out by donative revenues in a range of nonprofit organizations. In this work, Segal and Weisbrod actually find complementarities between donative and commercial revenues, in the university setting, which they argue reflects scope economies across these functions.

Even casual inspection of the data suggests that colleges and universities differ quite dramatically in their base level of giving. There are three approaches used in this paper for dealing with these differences as we move forward in trying to identify any crowding out. Approach 1 is to try to identify some , hopefully exogenous , variables which adequately explain the differences across base levels of university giving and then see, in that context, whether endowment growth matters. In many ways this is a traditional (or some might say old-fashioned) approach, and , of course, is vulnerable if the right hand side variables are , in fact, not exogenous. A second approach is to use lagged values of the dependent variable to capture base level differences among colleges, and then again see if endowment growth matters. Finally, if one has panel data , one can use a fixed effects model, effectively allowing for university and college differences without trying to model those differences. These latter two methods have much in common; both avoid some of the sticky endogeneity issues, but are sometimes less satisfying in the sense that so much of what is interestingly different about the data ends up suppressed in the fixed effects or the lagged value.

In what follows, all three approaches are used to analyze crowding out. Unfortunately, the panel data runs only through 1997, and thus do not contain the period of really high endowment growth that we see in the 1999 data. In addition, the 1999 data

allows us to look at some of the compositional issues in a more thorough way, so that again, we will not have the full benefits of parallel analysis.

Approach 1: Cross Sectional

The first part of the empirical analysis looks at the effect of endowment growth on voluntary giving to four-year colleges and universities, using the 1999 data set. The model to be estimated is:

$$1. \qquad Y_i = \alpha + \sum_j \beta_j Z_{ij} + \gamma X_i + u_i$$

Where Y_i is the log of contributions per student for university i in 1999, the Z_{ij}'s are a set of variables that differ across colleges, and X_i is the endowment growth for university i. The use of logs follows the literature and reflects the fact that we would likely expect changes in the explanatory variables to have a fixed proportional effect .

The results of estimating equation 1 are given in Table 2. The dependent variables include three categories of giving: total giving, alumni giving and nonalumni individual giving. All variables are measured as logs, per capita. In the sample, the mean total giving per capita is $4357; as calibration, we note that Amherst College generates just over $25000 per student. In the sample, alumni giving represents 30% of the total giving, which is in line with overall estimates.

The right hand side variables, the Z's, used in the first regression include dummies for type and quality of institution and enrollment levels. Prior work suggests that public institutions have substantially lower giving per capita than private, suggesting that we should find a negative coefficient on the public/private dummy. The remaining dummies are indications of whether the institution is: a university ranked in tier 1, or tier 2; or a college, ranked in tier 1 or tier 2. The ranking figures are taken from U.S. News

and World Report, 1998 rankings. Lagged rankings were used to reduce endogeneity problem. Enrollment levels were included to test whether the likely free rider effects in college giving increase with size; the expected sign in this case would be negative as large size causes a decline in per capita giving. After eliminating all two-year colleges from the sample, and taking account of missing observations, 700 universities and colleges remained in the sample.

The variable of central issue in this paper is endowment growth. In Table 2, endowment growth is defined as the change in the value of the endowment over the two-year period 1995 to 1997. Lagged returns were used to reflect the fact that fund raising likely responds to past performance. The mean return on endowment over this period is 43%, for the two-year period. Endowment returns vary considerably across institutions, however. A simple regression on these data, however, suggests that returns are not a function of endowment levels.

The regressions reported in Table 2 were estimated using the White correction for heteroskedasticity. (White, 1980). All of the independent variables have the expected sign except the enrollment variable, which was essentially zero. The ranking variables are highly significant and the ordering makes economic sense. That is, having a rank as a tier one school increases giving more than a tier 2 ranking, but tier 1 and tier 2 ranks perform better than the unranked, omitted group. In the case of alumni , per capita giving is highest among tier 1 colleges, which is consistent with one's intuition about the loyal alumni of top ranked liberal arts institutions. Most significantly, all three regressions indicate a highly significant crowding out effect, with somewhat stronger effects on the alumni giving equation. All three regressions have reasonably good fit as well.

Table 2
Giving by Donor Type, 1999:
Approach 1

	Dependent Variable		
Independent Variable	Log of Total Giving Per Capita	Log of Alumni Giving Per Capita	Log of Non-alumni Giving Per Capita
Constant	7.83(136.79)*	6.39(77.69)*	6.47(93.83)*
Enrollment	.000003(.79)	.000009(1.56)	.0000004(.105)
Public College (=1)	-1.40(-13.77)*	-1.90(-12.53)*	-1.51(-12.11)*
University tier 1	1.55(11.23)*	1.78(8.54)*	1.21(8.18)*
University tier 2	.83(56.92)*	1.15(5.83)*	.70(5.94)*
College tier 1	1.43(16.14)*	2.25(18.04)*	1.04(7.33)*
College tier 2	1.03(11.18)*	1.63(10.96)*	.84(6.74)*
Past endowment growth	-.002(-2.80)*	-.0037(-3.20)*	-.002(-2.72)*
N	700	700	700
R^2	.52	.51	.40.

*Regression were estimated with white corrections for heteroskedasticity * indicate significance at the .01 level. T statistics in parentheses*

Approach 2: Lagged Variables

A second approach to estimating the crowding out effects involves estimating the following equation:

2. $Y_{i,}\,1999 = \alpha + \beta\, Y_i\, 1995 + \gamma\, X_i + u_i$

For this specification, $Y_{i,}\,1995$ is the 1995 level of the log of per capita giving at school i. The 1995 levels were obtained by matching the 1999 data with the panel data set to retrieve the 1995 levels. The X_i, endowment growth, was defined as in the earlier regression.

Table 3 reports the results of this regression, again using the White correction for heteroskedasticity. The regression was run only on the total giving category. The number of observations shrank modestly given missing data for the 1995 period. The results are consistent with those in Table 2. As expected the lagged giving is highly

significant, and less than 1 , which is consistent with the aggregate time trends (i.e. , for most schools giving has increased between 1995 and 1999). The fit of the regression is strong. And, as earlier, we see a significant crowding out effect.

Table 3
Cross-Section Giving: Approach 2

Dependent Variable: *Independent variable*	*Log total giving per capita 1999*
Constant	1.387(10.08)
Log total giving per capital, 1995	.88(49.98)
Endowment growth	-.001(-2.40)
N	696.
R^2	.82

Regression was estimated with white corrections for heteroskedasticity,
t- statistics in parenthesis

In the first two sets of regressions , we used the 1999 giving data to estimate the crowding out effects . The results suggest that in the 1999 period, after almost a decade of strong endowment growth, there appears to be some crowding out of new donor dollars. We turn now to the panel data to see whether or not there is evidence of crowding out in the earlier period covered by these data.

Approach 3: Fixed Effects

The VSE panel data contain information on various categories of giving for just over 1,000 four-year institutions, from 1980 to 1997. There are also data on endowment values for most of the institutions for most of the years, as well as enrollment data. On the other hand, we do not have the ranking data for this full period, which was independently collected for the earlier data set. For the panel data, the approach instead was to estimate a two-way *fixed effects model,* collapsing all of the differences across the universities and colleges into a single term. The fixed effects model was used to control both for the specific university characteristics

which might influence its giving patterns as well as the year effects. The fixed effects model is equivalent to running a separate constant term for each university. Essentially, we are abstracting out from the kinds of university features which we included in the Table 2 regressions. The coefficients on the remaining variables estimated can thus be thought of as the effect on per capita giving, holding university and year constant. The underlying assumption of the fixed effects model is that the university or college constant stays the same over the period.; to the extent that one believes that academic reputations and strategies are more variable than this, the fixed effects model may be problematic. In this case, the first approach which tries to correct for those changes will be preferable.A Hausman test rejected the random effects model. (Hausman, 1978).

Table 4 reports the results of a one-way and the two-way fixed effects model on the log of per capita giving by three categories: total giving, alumni giving and parental giving. As earlier, the log specification is used. As earlier, the endowment growth is lagged one year. As a result, the 1980 and 1981 observations are lost. Dummies are used for each year and are reported on the table. The results are quite striking. While the one-way fixed effects specification, accounting only for the year differences, suggest crowding out effects, much as the earlier regressions did, in the two-way fixed effects model, these effects go away. The difference in the two regressions reported in Table 4 suggest that unobserved heterogeneity among schools is an important feature of the model. Of course, this is not surprising given our earlier results. That is, the results of Tables 2 and 3 suggest that there are, in fact, considerable differences among colleges and universities in giving behavior. In the earlier regressions, we captured these differences either through identifying variables or through the use of a lagged variable. Here, the school fixed effects capture those differences. The year dummies are

significant and sensibly signed, with a strong—though not monotonic—upward trend over the period.

Table 4
Fixed Effects Models of Giving
1982-1997 Data

Dependent Variable	Log Giving Per Capita		Log Alumni Giving Per Capita		Log Parent Giving Per Capita	
	Two-way	Fixed Effects	Two-way	Fixed Effects	Two-way	Fixed Effects
Constant	6.88(133.28)	5.79(144.03)*	5.25(78.12)*	4.94(143.65)*	2.83(28.82)*	1.99(45.38)*
Enrollment	-00003(-26.77)*	-.00003(-11.84)*	-.00004(-25.12)*	-.00004(-10.72)*	-.00010(-38.7)*	-.0003(-1.75)
Year Dummy 1982	-	-	.042(.43)	-	-.061(-.44)	-.157(-2.57)*
1983	.011(.17)	.163(4.70)*	-	.133(4.79)*	-	-
1984	.123(1.77)	.164(7.55)*	.131(1.41)*	.214(7.76)*	.079(.59)	.103(1.72)*
1985	.146(2.11)*	.259(11.93)*	.126(1.37)	.310(11.26)*	.014(.10)	.106(1.80)*
1986	.308(4.42)*	.391(17.98)*	.332(3.59)*	.476(17.30)*	.239(1.78)	.234(3.93)*
1987	.448(6.45*	.539(24.84)*	.578(6.26)*	.706(25.65)*	.445(3.29)*	.490(8.23)*
1988	.302(4.39)*	.457(21.25)*	.398(4.37)*	.621(22.82)*	.343(2.61)*	.402(6.86)*
1989	.284(4.14)*	.529(24.61)*	.371(4.10)*	.709(26.05)*	.393(3.01)*	.537(9.20)*
1990	.404(5.80)*	.584(26.26)*	.557(6.04)*	.771(27.90)*	.574(4.34)*	.669(11.31)*
1991	.419(6.03)*	.616(28.24)*	.534(5.82)*	.828(30.0)*	.541(4.14)*	.768(13.06)*
1992	.394(5.69)*	.663(30.34)*	.559(6.10)*	.928(33.54)*	.485(3.70)*	.753(12.78)*
1993	.428(6.20)*	.689(32.65)*	.673(6.93)*	.975(35.34)*	.539(4.14)*	.806(13.73)*
1994	.537(7.71)*	.796(36.19)*	.731(7.93)*	1.11(39.68)*	.541(4.14)*	.908(15.13)*
1995	.542(7.83)*	.835(38.14)*	.688(7.52)*	1.13(40.81)*	.572(4.39)*	.974(16.61)*
1996	.634(9.22)*	.915(42.09)*	.856(9.41)*	1.25(45.60)*	.522(4.06)*	1.00(17.28)*
1997	.777(11.37)*	1.06(49.12)	.983(10.86)*	1.39(50.76)*	.718(5.59)*	1.13(19.48)*
Endowment growth	-.003(-10.00)*	-.00002(-.16)	-.005(-11.12)*	.00008(.06)	-.004(-5.44)*	-.0003(-1.00)
N	10885	10885	10834	10834	8813	8813
Groups	-	1051	-	1050	-	918
Hausman	-	$Chi^2 = 1320$	-	$Ch^2 = 1588$	-	$Chi^2 = 36.76$
Test	-	Pr = .0000	-	Pr = .0000	-	Pr = .003

t-statistics in parentheses

Clearly the two-way fixed effects model using the panel data tell us a different story from that told by the cross sectional data. In the earlier period covered by the panel, no crowding out is apparent in any of the giving categories once one accounts for both college and year effects. There are two plausible explanations for the observed differences. On the one hand, the time period difference may be important. Public interest in the phenomenon of growing endowments by academic institutions seems to have grown in the last few years. Note the recent articles in the Chronicle of Higher Education cited earlier, as well as the very recent moves by colleges like Williams and Princeton on tuition plans. It may well be that there simply has not been any

crowding out until quite recently. Of course, the difference in the results may also reflect the methodological differences; the fixed effects model may simply be doing a better job of removing university heterogeneity. Recent work by Rhoads and Gerkins (2000) on whether or not athletic success affects contributions finds a similar reduction in the crowding out effect when one moves to a fixed effects model. We note the two-way fixed effects model is itself vulnerable to changing school effects.

Compositional Effects

The model of fund raising developed in Section 2 of this paper suggests that the crowding out effect may affect some donor groups more than others, giving rise to a compositional effect. In particular, on the donor side, the model predicts that endowment growth will have its smallest effect on the "warm glow" donors who are giving principally as a private good matter. The model further suggests that, of the donors who are giving to induce production of a set of university services, those with preferences most orthogonal to those of the college administrators will be least crowded out. On the fundraisers' side, we expect crowding out to work from the bottom up, shrinking the most expensive, least productive fund raising activities first.

Of course, it is not easy to identify the "warm glow" donors. As a general matter, however, one might expect the very large donors to be disproportionately in this class. Moreover even when very large donors derive utility principally from the public good/production side, of their gifts, the very size of their gifts often reduces crowding out as displacement is less likely. Very large gifts have the capacity to change university-funding priorities in ways that small gifts cannot and many donors recognize their power. Thus, one might expect large gifts to increase in importance as endowments grow. In fact, there is evidence at the broad level which supports

this proposition: in 1992, the top twelve gifts in the CAE sample institutions comprised 35.7% of all reported gift income, up from 31.5% in 1992. A survey by the Council for the Advancement and Support of Education, CASE, reported that of their 138 colleges reporting, 80% of the funds raised in 1998 came from the top 10% of donors; in 1995, that same ten percent contributed only 58% of all gifts. (Chronicle of Higher Education, December 10,1999). Growth in these large gifts is also clearly consistent with more focusing by retrenching academic administrators. It is well known that small gifts are relatively expensive to raise : one university fund raiser estimates that while high end gifts cost eight or nine cents per dollar raised, more modest gifts to the annual fund have average costs of twenty cents per dollar raised. (Morton Schapiro, Dean, USC, in Chronicle of Higher Education, March 31,2000). Thus, if fundraisers respond to endowment growth by dampening their fund raising efforts, one would likely see a relative reduction in the smaller, less profitable gifts. Such an effect might be quite profound at the very senior level of administrators. The President of USC, Stephen Sample, for example, was reported in 2000, to have "shifted his focus up the gift range." (Chronicle, 3/31/2000).

Of course, the compositional shift noted above, while interesting , may well reflect other things going on in the economy, for example, the differential wealth growth among high-end donors due to the stock market. The same can be said for a number of the other changes we see in university giving. The decline in corporate giving is likely due at least in part to a reclassification of corporate cause-related gifts as marketing expenses. The increase overall in restricted giving may reflect some decreased trust on the part of donors. As in the trends in total giving, one needs to focus on the marginal effects in looking at crowding out. We turn now back to the 1999 cross sectional data to see what we can learn about the effects of endowment growth on various categories of donors.

Table 6 looks at three types of compositional effects. In column 1, we consider the effect of endowment growth on the share of giving to current operations that are restricted. We know from the aggregate data that colleges in general have seen an increase in restricted giving in the last five years, as donors have become more end-result focused. The question here is whether high endowment growth schools have seen less growth in restricted funds than low growth schools. Again, the model suggests that restricted funds are most vulnerable to crowding out.. Thus the share of restricted funds in total giving should fall with endowment growth. Moreover, restricted funds are on average less attractive to fund raisers than are unrestricted funds and this too may reinforce the donor-side effect.

The results in Table 6 do indicate a significant effect of the expected sign. The share of giving which is restricted falls with endowment growth across the sample of colleges and universities, again holding constant a vector of institutional characteristics. We note again that endowment growth is not correlated with endowment size in this sample. It is also interesting to note that being a university increases the likelihood that funds will be restricted, which is consistent with the view that the breadth of university activities increases the desire of donors for control. Public institutions also seem to get a disproportionate share of restricted funds, perhaps in part as a reaction against crowding out by government dollars.

Table 6
Compositional Effects, 1999 Data

Dependent Variable	Share of Giving to Current operations which is restricted	Restricted Giving on Athletics per Capita	Restricted Giving on Academics per Capita
Constant	.47(34.07)*	2.35(16.45)*	3.58(31.27)*
University tier 1	.27(9.41)*	.95(2.65)*	2.22(10.09)*
University tier 2	.13(5.14)*	.75(2.79)*	.94(3.79)*
College tier 1	-.067(-2.42)*	1.01(3.54)*	1.34(7.95)*
College tier 2	-.026(-.86)	.58(2.08)*	.92(3.62)*
Public/Private (1 = public)	.38(22.82)*	.08(.31)	-.32(-1.50)
Endowment growth	-.0003(-1.82)*	.0009(.66)	-.003(-2.54)*
Enrollment		.00003(2.24)*	.00003(2.95)*
N	700	419	581
R^2	.51	.10	.20

Regressions were estimated with white corrections for heteroskedasticity *indicate significance of the .01 level.
t statistics in parentheses.

The second two columns of Table 6 provide further evidence of the compositional effect by looking at two specific categories of restricted giving: giving to athletics and giving to academics. I would argue that academic administrators in general have less of a taste for athletic funding than their avid alumni, but no such great divide is apparent in the academic side. If true, this suggests that donors to athletics will perceive a lower elasticity of substitution between their funds and overall endowment funds when it comes to their pet projects, than more general academic funders. This , in turn, would lead to less crowding out for athletic dollars than academic. And, indeed, this is the evidence provided in columns two and three of Table 6. The regressions provide no evidence of crowding out of athletic donations, while the academic donations again are reduced in response to endowment growth.

As a last piece of analysis, we look at the trends in corporate giving across the universities. While corporate giving has declined somewhat over the last decade, it remains an

important part of the fund raising of most colleges and universities, comprising on average almost 20% of total fund dollars. Most corporate funding , however, is highly restricted, often going to a particular project. As one university fundraiser at the University of Wisconsin at Madison observed about their high reliance on corporate giving: "The department of Slavic Studies and the philosophy department tend not to have major donors throwing money at them." (Quoted in Pulley, 1999). Given the narrow focus of corporate giving and the quid pro quo character of most gifts, one would expect little crowding out. And, indeed, that is precisely what we find in Table 7. While institutional variables matter a good deal in the levels of corporate funding, with top tier universities well ahead of the pack, endowment growth has no effect on this giving.

Table 7
Corporate Giving: 1999

Dependent Variable: Independent Variables	Log Corporate Giving Per Capita: 1999
Constant	5.16(92.87)*
University tier 1	1.83(14.16)*
University tier 2	.93(6.23)*
College tier 1	.63(5.92)*
College tier 2	.67(6.49)*
Public/private (public = 1)	-.57(-4.87)*
Enrollment	.00002(3.4)*
Endowment growth	-.0004(-.70)
N	700
R^2	.30

Regressions were estimated white corrections for heteroskedasticity
*indicate significance of the .01 level using robust standard errors.
t-Statistics in parentheses.

4. Conclusion

The higher education industry finds itself in an enviable position in the first part of the new century. We offer a product which is in relatively high demand, not only to

our own American students , but also increasingly to the international market. We are almost uniquely able to use fine-grained price discrimination to manage different demand elasticities of our customers. While historically we have had relatively low productivity growth, at least as measured by student/faculty ratios, recent improvements in distance learning technology may even improve that picture. Finally, the industry has experienced record increases both in the returns to their endowments and levels of charitable giving, allowing institutions of higher education to undertake substantial new projects. At Yale, for example, decades of deferred maintenance have been remedied due to the combined largesse of the market and our alumni.

But in these boom times, there is a specter of a backlash. One cannot help but note an increase in the number of articles complaining about the growing wealth of the university. My results suggest there may well be a very recent adverse response in the giving levels to university affluence. If the consequence of today's increased wealth is a reduction in the habit of giving of traditional donors, then universities which have made important, and hard to retract changes in faculty compensation, scholarship programs, and tuition levels , may well find the future more difficult. Similarly if that endowment growth creates a shift in the relative generosity of various groups of donors, this too must be taken into account by university administrators.

References

Abrams, Burton and Mark Schmitz, "The crowding out effect of government transfers on private charitable contributions," Public Choice. 33(1), 1978, 29-39.

Altschuler, Glen, "Endowment Payout rates are too stingy," The Chronicle of Higher Education, March 31,2000.

Andreoni, James. "An Experimental Test of the Public-Goods Crowding out hypothesis," American Economic Review, December 1993, 1317-1327

Clotfelter, Charles. Federal Tax Policy and Charitable Giving. Chicago: University of Chicago Press, 1985

Council for Aid to Education, 1999 Voluntary Support of Education. Washington DC, 2000
--------- Data Tape for 1999 Giving
---------- Data Tape, 1980-1997.

Hansmann, Henry, "A Modest Proposal," Interview in the New York Times with Karen Arenson, August 2, 1998.

Hausman, Jerry," Specification tests in Econometrics," Econometrica 46:6, 1978, 1251-1272.

Kingma, Bruce. "An accurate measure of the Crowd-out effect, income effect and Price effect for Charitable Contributions," Journal of Political Economy, October 1989, 1197-1207

Lively, Kit, "Giving to higher education breaks another record," Chronicle of higher education,. May 5,2000.

Pulley, John," Does my million mean anything?" Chronicle of Higher Education, March 31, 2000.

Pulley, John, "Campaigns are getting longer and relying on fewer donors," Chronicle of Higher Education," December 10,1999.

Rhoads, Thomas and Shelby Gerkins,"Educational Contributions, Academic Quality and Athletic Success," Contemporary Economic Policy, April 2000, 248-258.

Segal,Lewis and Burton Weisbord,"Interdependence of commercial and donate revenues," in Burton Weisbrod,ed. To Profit or Not to Profit. Cambridge: Cambridge University Press, 1998, 105-128.

Steinberg, Richard," Does Government Spending Crowd out donations?" in Avner Ben-Ner and Benedetto Gui, eds. The Nonprofit Sector is a Mixed Economy. Ann Arbor: University of Michigan Press, 1993. 99-125.

Steinberg, Richard, "Voluntary contributions and public expenditures in a federalist system," American Economic Review March 1987, 24-36.

U.S. News and World Report, "America's Best Colleges," Annual Rankings: 1995. September 18, 1995, p 129.

White, Halbert, "A Heteroscedasticity-Consistent Covariance Matrix estimator and a Direct Test for Heteroscedasticity ," Econometrica48:4, 1980. 817-838.