Articles

Philanthropy and Hospital Financing

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Objective. This study explores the relationships among donations to not-for-profit hospitals, the returns provided by these hospitals, and fund-raising efforts. It tests a model of hospital behavior and addresses an earlier debate regarding the supply price of donations.

Data Sources. The main data source is the California Office of Statewide Health Planning data tapes of hospital financial disclosure reports for fiscal years 1980/1981 through 1986/1987. Complete data were available for 160 hospitals.

Study Design. Three structural equations (donations, returns, and fund-raising) are estimated as a system using a fixed-effects, pooled cross-section, time-series least squares regression.

Principal Findings. Estimation results reveal the expected positive relation between donations and returns. The reverse relation between returns and donations is insignificant. The estimated effect of fund-raising on donations is insignificantly different from zero, and the effect of donations on fund-raising is negative. Fund-raising and returns are negatively associated with one another.

Conclusion. The empirical results presented here suggest a positive donations-returns relation and are consistent with a positive supply price for donations. Hospitals appear to view a trade-off between providing returns and soliciting donations, but donors do not respond equally to these two activities. Attempts to increase free cash flow through expansion of community returns or fund-raising activity, at least in the short run, are not likely to be highly successful financing strategies for many hospitals.

Key Words. Philanthropy, donations, hospital returns, fund-raising

As hospitals have come to face increasing difficulty in generating sufficient cash flow from patient care revenues to support their current level of operations, they have naturally turned to other strategies in search of potential sources of financing (Lamont, Marlin, and Hoffman 1993). Many hospitals have sought to boost cash flow by changing or improving the focus of their patient care activities, while others have attempted to bolster cash flow through diversification into other lines of business (Clement 1987; Eastaugh 1992) Continuous quality improvement methods and reengineering systems are relatively new concepts, but hold great promise (Griffith 1994).

Hospitals have also turned to nonoperating sources of cash. For the not-for-profit hospital, there are two such nonoperating sources of cash: income from investments and income from philanthropic donations. This article focuses on philanthropic donations and considers what, if anything, the hospital must do to stimulate contributions to its support. Specifically, this article explores the relationship between the level of philanthropy and the behavior of the hospital in terms of its provision of community service and its level of fund-raising effort.

Donations differ from other sources of financing in some important ways. In receiving donated funds, the hospital does not assume a contractual obligation to repay the funds, as it would in taking on debt financing. Nor does the hospital transfer rights to ultimate cash flows, as would be the case with stock-equity financing. However, it is reasonable to expect donors to require some form of return in exchange for their gifts. The general expectation is that donors receive returns on their gifts in the form of outputs delivered to a community about which the donors care. But the question is: What specifically do donors require? And the related question is: What can the hospital do, or how should it behave, to stimulate additional donations? Should the hospital use some of its earnings to provide noncash returns to donors to stimulate additional donations? Should it focus its efforts on fund-raising campaigns? Or should the hospital not be concerned with donations and focus solely on improving operations?

Development of expectations about answers to these questions is facilitated by specifying a model relating donations to firm behavior. Models directly relating philanthropy and firm behavior are rare in the general economics literature on the not-for-profit firm.[1] Contributions in health economics by Frank and Salkever (1991) and by Sloan et al. (1990) directly relate donor preferences and hospital behavior. Both of these studies model donations as a factor in determining hospital service decisions. Frank and

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Salkever (1991) focus on charity care as the return that interests donors to hospitals, and profitability as a measure of a hospital's need for support in producing charity care. They incorporate market competition as a factor that constrains charity care and profit, and that therefore affects a hospital's ability to attract donations. Sloan et al. (1990) also include charity care as the return that interests donors, as well as other hospital and market factors that attract donations. We build upon these models in the next section.

The precise character of the return required by donors, whether in the form of charity care or other services, is the subject of an exchange in the literature among Conrad (1986), Pauly (1986, 1987b), and Silvers and Kauer (1986). The debate concerning whether reimbursers should provide an explicit return on equity to not-for-profit hospitals, which initiated this exchange, is not relevant to current market conditions. However, in today's fixed-price environment, whether some of the hospital's earnings should be used for noncash returns to donors is an important managerial and community concern.

The exchange began with the argument by Conrad (1986) that competition in the market for hospital services implies that not-for-profit hospitals ought to earn a return on equity similar to that earned by investor-owned firms. Pauly (1986) followed with the points that, from a social perspective, health care purchasers ought to pay a price that includes a return on equity only if such return is required by donors, and that such returns may be zero or very low. Silvers and Kauer (1986) argued that, because donors have investment opportunities that permit them to earn market returns and to use the proceeds in purchasing social goods of value to them, donors require that the return on the money they invest in not-for-profit hospitals be equal to the after-tax market return. The value of the required return is expected to be equal to the market return if the market for donors' investments includes investments in all other assets and is perfectly competitive (Silvers and Kauer 1986). Pauly (1987b) effectively concluded this theoretical exchange by suggesting that the market for donations is probably imperfect, so returns required by donors are unlikely to be equal to returns in the general market. Therefore, the required return is more likely to be positively related to the level of services produced by the hospital. Ultimately, Pauly (1987b) suggests that "the only way to settle the matter would be an empirical investigation of how donations to hospitals would vary with the extent of donor-pleasing activities by the hospital" (p. 272).

This article presents the results of such an empirical investigation. It is based on a model that incorporates donors' required returns as a constraint on the behavior of the hospital, thereby linking donations with firm behavior.

Donations are considered to be a financial input obtained by providing services desired by donors and by soliciting donations. This model starts very much like the model of Sloan et al. (1990). However, the key conceptual contribution of this investigation is that donations are viewed as having an explicit required rate of return. The specific nature of donors' return constraints on firm behavior permits a direct empirical test of the issue of the relationship between donations and returns.

MODEL

For simplicity of exposition, the model that motivates the investigation of the donation-returns relations assumes that not-for-profit hospitals maximize utility, U, which is a function only of the quantity and types of services provided by the firm: $U = U(Q)$, where $U_i > 0$, $U_{ii} < 0$, and the subscripts refer to the partial derivatives with respect to output, $_i = 1,2,\ldots N$. The hospital derives positive but diminishing and not necessarily equal utility from the provision of all N outputs.[2]

The hospital maximizes utility subject to two constraints: a constraint on net income and a constraint reflecting the returns required by donors. The net income constraint requires that:

$$PQ \quad C(Q) + D(Q,E,G,X) \quad E + G = 0$$

where

P = price of services
Q = output
C = the cost function for the production of Q
D = the donations function
E = solicitation expenditures
G = government revenues, and
X = other factors that affect donations.

Within a single period, revenues equal expenditures. Profits would imply, at a minimum, lost opportunities to produce services that increase utility (Wedig et al. 1988). Losses cannot be sustained in equilibrium.

Effectively, the utility functions of donors are implicit in the donations function, which is a derived expenditure function for services Q. While donors are primarily concerned with Q, about which they may have imperfect information, their contributions are also affected by information about services given by solicitation efforts, government involvement, and other factors such

as religious affiliation. Factors such as cash position and financial reserves may signal hospitals' ability to produce services, and may also affect donations. Finally, donors' constraints, such as personal income, may also affect donations. Increasing services is expected to have the effect of increasing donations, $D_i > 0$, but at a decreasing rate, $D_{ii} < 0$.[3]

Solicitation efforts affect the quantity of donations indirectly by giving donors additional information on the value of hospital services and by rewarding donors. Solicitation efforts are expected to increase donations, $D_E > 0$, but at a decreasing rate, $D_{EE} < 0$. We propose the notion that donors as a whole truly value only hospital services, and that solicitation efforts merely make donors more aware of the value of hospital services. Following this notion, we would predict that $D_{iE} > 0$, that is, higher levels of services increase the productivity of solicitation efforts. At higher levels of services there are more benefits about which it is beneficial to tell potential donors.

In addition to the motivation for solicitation that we propose, it is plausible that specific solicitation efforts may also be pleasing to donors. Solicitation efforts may take the form of phone campaigns, advertising, presentation of plaques, or other activities that promote donations without changing services. While Pauly's (1987b) discussion of "donor-pleasing activities" includes both services to patients and hospitals' rewards to donors, we suggest that the latter represent solicitation efforts and are not returns that donors as a whole would value.

Government spending is expected to have the effects of increasing hospital revenues and partially "crowding out" donations, $1 < D_G < 0$. That is, government spending does not affect donors per se (i.e., donors neither like nor dislike government involvement), but government spending provides information that the government is paying for some of the services provided by the hospital. The partial crowding-out expectation deviates from models that associate dollar-for-dollar decreases in donations with government spending (Roberts 1974), but it is consistent with most empirical results (Abrams and Schmitz 1984).[4]

The second constraint concerns the actual and required returns on donations:

$$R(Q,M) = B(Q)/D(Q,G,X,E)$$

where

R = the required return and

B = the donor's perceived value of services.

The earned return on donations is the ratio B/D. Donors' judgments regarding the earned rate of return require, at a minimum, that donors observe services and total donations. Donors' observations on alternative measures of hospital performance, such as the quality of care or the marginal output from another dollar of donations, would enhance their ability to make decisions about the worth of hospital services and their appropriate response in terms of donations. While measures of quality do not generally appear on hospital cost reports or other readily available and standardized sources of information, messages regarding quality may be presented in solicitation efforts. Again, the minimum requirement that at least some measures of returns will be observed is likely to be met, even if the information available for observation is not ideal.

The returns constraint requires that in equilibrium the hospital produce services in sufficient quantity relative to the donations provided to satisfy the donors' required return. Adjustments for market returns, taxes paid by donors, and the relative risks associated with the various returns are included in a shift factor, M. The effects of all of these adjustments on $R(Q,M)$ are defined such that $R_M > 0$: higher overall market returns (i.e., opportunity cost of donors' funds), lower tax rates, and higher relative risk all increase the required return. This constraint would be redundant in a formal modeling of output determination, as M would be included directly in D as part of the income constraint with no loss of generality. However, this notation is presented to make explicit the characterization of the donation as an investment in the firm.

Donations are viewed here as one-period investments in the production of services. In this sense, the return paid to donors is analogous to returns paid to debt or equity holders. In for-profit companies the function B simply discounts the sum of future cash flows.[5] However, in not-for-profit firms the measurement of earned returns comes from the donors' perceptions of the value of hospital services. The function B for the not-for-profit firm translates donors' utility-based valuation of services into dollars so that they can be compared to the dollar value of donations. The translation of B, from services to dollars, is analogous to the assignment of a dollar value to social outputs in a cost-benefit analysis of a social program. The expectation is that $B_i > 0$ and $B_{ii} < 0$; additional returns produced by the hospital provide positive but diminishing marginal value to donors.[6]

A mathematical appendix that is available from the authors presents a formal derivation of the comparative static results of this model. These results include the following four predictions:

1. Production of additional services by the hospital is associated with increasing donations.
2. Receipt of additional donations is associated with increasing services.
3. Solicitation efforts increase donations, and donations are solicited past the point where an additional dollar spent on donations is associated with an additional dollar of donations.
4. Availability of relatively less risky or more profitable returns in the general market for investments is associated with decreasing donations and services.

DATA

To test these predictions of the model, data on California hospitals were collected for fiscal years 1980/1981 through 1986/1987. The main data source is data tapes of annual hospital financial disclosure reports generated by the Office of Statewide Health Planning. Included hospitals meet the following criteria: (1) private not-for-profit status (excludes public and for-profit hospitals), (2) nonteaching hospitals, and (3) complete data available from hospital financial reports. Neither for-profit nor public hospitals typically receive donations in the same manner as not-for-profit hospitals. Teaching hospitals have educational missions that extend far beyond those of community hospitals. The set of hospitals defined on the basis of the first two criteria numbers 197 (or 1,379 potential observations). Complete data were available for 160 hospitals and 1,120 observations.

Specific definitions and descriptive statistics of all variables used in this article are listed in Table 1. All variables are adjusted for inflation using the Consumer Price Index (All Items), so that all values are in 1991 U.S. dollars. More detailed discussions of the variables are now presented.

DEPENDENT VARIABLES

Donations

Donations are measured as total current year donations. Although not a large dollar amount on a per bed basis, the hospitals received a total of $263 million over the study period. Measurement of donations and other variables on a per bed basis permits a standardization of measures and avoids difficulties associated with multicollinearity.

Table 1: Variable Definitions and Descriptive Statistics

Variable	*Mean Value ($1991)*	*Standard Deviation*
Dependent Variables		
Total new donations per bed	$1,211.04	$1,989.06
Total community returns	28.55%	58.75%
Total fund-raising expenses per bed	$743.09	$891.73
Government Financing		
Medicaid allowance per bed	$8,413.25	$7,076.29
Medicare allowance per bed	$20,825.95	$13,644.63
Financial Market Characteristics		
U.S. Treasury bill 90-day rate	9.08	2.86
Standard & Poor's 500 rate	14.43	11.82
Hospital Characteristics		
Available beds	193.85	134.71
Medicare case-mix index	1.22	0.35
Church-affiliated	0.15	
Current ratio	1.84	1.00
Prior period return on assets	4.83%	7.89%
Percent unrestricted equity	96.60%	27.06%
Total debt per bed	$67,206.64	$69,828.57
Market Characteristics		
Herfindahl index	0.17	0.19
County per capita income	$17,840.40	$3,148.78
Post-PPS (1981–1983 = 0, 1984–1987 = 1)	0.57	

Returns

Returns to donors cannot be paid directly but, instead, take the form of services for the community. Many alternative approaches may be taken to valuing these services. Research on non-industry-specific donations has considered services in terms of the total quantity provided (e.g., hospital admissions, operas performed). Much previous work on hospital returns has focused on charity care and bad debt expense as the services of importance to donors.

Following the work of Clement, Smith, and Wheeler (1994), the measure of returns here is the sum of five components: charity and bad debt deductions (measured at facility costs, which are lower than charges), unsponsored research and education expenses (also measured at cost), net income, money-losing services (department totals measured at cost), and the price differential from neighboring for-profit hospitals (based on average net revenue per adjusted patient day). Returns are converted to a percentage rate by dividing by the hospital's total assets. Total assets represents the community's total investment in the hospital.

Returns can be defined in many alternative ways, including community health, quality care, and access to services (Sigmond 1994). However, making use of alternative definitions presented three problems for our research. First, the value of returns in the form of improved community health and like examples is conceptually ideal, but difficult to capture without having some prospective measurement system in place. For purposes of justifying tax exemption and providing information to relevant stakeholders on the value of services provided, such measurement systems are being developed (Kovner 1994). Second, even if measures of health, quality, and access were captured, placing dollar values on these measures for comparisons with donations would be challenging. Therefore, our study suffers from an unavoidable errors-in-variables bias, unless quality and other factors are provided in direct proportion to the measured returns. Third, measures of donor recognition that some would consider returns are even more elusive than measures of community health. Although in concept we would characterize the provision of dinners, plaques, board seats, and the like as solicitation efforts–activities to educate donors and to encourage donations other than direct community returns–we are unable to capture these factors empirically to consider the issue further.

Fund-Raising

Fund-raising efforts are measured by a single item from the cost reports that includes fund-raising and promotional expenses. Therefore, the only available measure of fund-raising efforts includes expenses aimed at more general promotion of the facility or specific services, and not exclusively efforts to solicit donations.[7] Despite the possible introduction of bias due to errors in variables, this option is viewed as preferable to the alternative of omitted-variable bias. As just stated, there remains an errors-in-variables bias due to our inability to determine the value of benefactor dinners, plaques, board seats, and similar recognition given to donors. Most prior work on donations to hospitals has not included a measure of fund-raising efforts.

INDEPENDENT VARIABLES

Government Financing

Government financing, as typically characterized in the public finance literature on non-profit organizations, refers to lump-sum grants. Such lump-sum grants were common during the formation of many community hospitals,

but have become much less common with the end of the Hill-Burton program. Instead, government financing takes the form of reimbursement for services provided by Medicare for the elderly and Medicaid for the poor. While both Medicare and Medicaid offer government support for services that might otherwise be provided by charity, by higher prices charged for other patients, or by another source of funds, the impact of each might be quite different from the perspective of donors. Medicaid reimbursement most closely matches the type of government support depicted in the theory of donations. Medicare reimbursement, while being similar to Medicaid in terms of providing payments for some needy persons, also reflects the age of patients. A higher Medicare market share represents an older group of patients, and (harshly stated) a potential source of bequests. Therefore, while Medicaid reimbursement may crowd out donations through a substitution of government for the private sector, Medicare market share may reflect additional opportunities for solicitation and donations.

Financial Market Returns

Financial market returns serve as the measure of opportunity cost for donors.[8] Selecting a particular measure of returns to match donors' opportunity cost is in no way obvious. This article uses one short-term interest rate, the U.S. Treasury bill 90-day rate, and one long-term rate, the Standard & Poor's 500 Index. These two rates are used because of their common use as measures of market returns available to consumers. As expected, short-term, low-risk T-bill rates are lower and more variable (coefficient of variation = 3.2) than stock market returns (coefficient of variation = 1.2). The seven annual observations show virtually no correlation between these two rates.

Hospital and Market Characteristics

A variety of hospital and market characteristics are included to control for the independent effects of institutional and environmental factors. Hospital and market characteristics (and their hypothesized effects on donations) are (1) available beds (the outputs of larger hospitals are more visible, reducing information costs and resulting in disproportionately more donations); (2) church affiliation (religious hospitals provide additional, unmeasured benefits and receive more donations); (3) case-mix index (higher case-mix index values may reflect complexity of available services, which may also be an output measure associated with more donations); (4) percent of equity that is unrestricted (hospitals with low reserves receive more donations); (5) the

county-based Herfindahl index (hospitals in less competitive areas receive more donations); (6) per capita income (hospitals in wealthier areas receive more donations); and (7) post-PPS (hospitals receive fewer donations over time since introduction of the prospective payment system). For hospitals nationally, donations have been relatively constant in real terms for two decades (American Association of Fund Raising 1993).

Model identification is approached by the inclusion of a unique variable in each equation. The Donations equation includes the current ratio of the hospital. The current ratio variable measures the hospital's short-run need for cash. It is hypothesized that hospitals with short-run cash needs will receive higher levels of philanthropic support than those with long-term needs. The Returns equation includes the amount of total debt per bed of the hospital. It is hypothesized that hospitals with more debt will be unable, for reasons of cash flow or bond covenants, to provide returns at as high a level as hospitals with less debt. The Fund-Raising equation includes prior period return on assets (ROA) as an indicator of cash flow available to support philanthropic solicitation in the current year. It is hypothesized that hospitals with better cash flow can support more substantial solicitation efforts.

EMPIRICAL ANALYSIS

As presented in the theoretical model, donations, returns, and fund-raising efforts are all closely related. The empirical model derived to explain the observed variation in each of these items therefore includes the other two items as well as control variables associated with each relation. Three structural equations (Donations, Returns, and Fund-Raising) are estimated as a system of using a fixed-effects, pooled cross-section, time-series ordinary least squares regression. To meet the requirement of normality of the error term of an OLS regression, the model uses the natural log of donations and square root transformations of returns and fund-raising.

The three-equation estimation results are presented in Table 2. Estimation results reveal the expected positive relation between Donations and Returns (column 1, row 2), which is statistically significant at the 95 percent confidence level ($p = .0421$). The reverse relation between Returns and Donations (column 2, row 1) is statistically insignificant. This latter result is consistent with the prediction of Thorpe and Phelps (1991). While donations may be predicted to result in changes in specific, designated returns (a price effect), changes in aggregate returns would not be predicted to be observed due to the insignificant income effect of most donations.

Table 2: Regression Coefficients (Standard Errors and T-Statistics) for the Three-Equation Model–Total Donations, Total Output, and Total Fund-Raising Efforts

Variable	*Donations*	*Returns*	*Fund-Raising*
Donations		−0.12964	−4.75965
		0.42161	1.85690
		−0.31	−2.56††
Returns	0.14162		−0.67564
	0.08193		0.38796
	1.73*		−1.74
Fund-raising	0.03372	−0.12054	
	0.03929	0.08721	
	0.86	−1.38	
Medicaid	−0.01581	0.00520	−0.03114
	0.02299	0.03771	0.15502
	−0.69	0.14	−0.20
Medicare	0.02167	−0.02108	0.33509
	0.01480	0.03217	0.08455
	1.46	−0.66	3.96**
T-bill	0.07966	−0.08131	−0.49986
	0.04853	0.09680	0.27694
	1.64*	−0.84	−1.80
Stock	0.00127	−0.00228	−0.11079
	0.00760	0.01452	0.04239
	0.17	−0.16	−2.61
Beds	−0.00061	0.00975	0.01669
	0.00160	0.00217	0.00977
	−0.38	4.50††	1.71
Church	0.51288	−1.08181	7.17512
	0.35182	0.77052	2.16176
	1.46	−1.40	3.32††
Case mix	0.88748	2.55172	11.33620
	0.43321	0.88685	3.50350
	2.05**	2.88††	3.24††
Unequity	0.00042	−0.00267	−0.00230
	0.00233	0.00387	0.01583
	0.18	−0.69	−0.15
Income per population	−0.03850	0.17340	0.00207
	0.09860	0.18156	0.00043
	−0.39	0.96	4.88††

Continued

Table 2: Continued

Variable	*Donations*	*Returns*	*Fund-Raising*
Herfindahl index	1.44793	−2.03457	7.14796
	0.77262	1.41201	5.47144
	1.87	−1.44	1.31
Post-Medicare PPS	−0.23397	0.47308	−0.01475
	0.18748	0.31143	1.26761
	−1.25	1.52	−0.01
Unique variable	Current Ratio	Debt	Prior ROA
	−0.04633	−0.00339	0.11572
	0.08437	0.00416	0.06548
	−0.55	−0.82	1.77
Intercept	2.44311	1.66395	2.15277
	1.12520	1.75131	9.06792
	2.17†	0.95	0.24
Observations	1112	1112	1112
Adjusted R^2	0.2714	0.5088	0.3489

*, **Significance at the .05 and .01 level, respectively (one-tailed *t*-test).

†, ††Significance at the .05 and .01 level, respectively (two-tailed *t*-test), with the null hypothesis that the coefficient equals zero.

The estimated effect of Fund-Raising on Donations is insignificantly different from zero. The inverse of this relation, the estimated effect of Donations on Fund-Raising, is negative. This result suggests that while additional fund-raising efforts are associated with insignificant increases in donations, facilities with high levels of donations have relatively lower expenditures on fund-raising. Fund-Raising and Returns are negatively associated with one another, suggesting some degree of substitutability between these methods of securing donations. This result was unanticipated by the theoretical model, which suggested that Fund-Raising and Returns would be complements.

The level of government financing (Medicaid) is not significantly associated with either Returns or Fund-Raising. Higher Medicare shares are associated with higher fund-raising efforts. (It was anticipated that this might be the case due to the possible dual interpretation of Medicare market share as government involvement and as reflecting older, potentially more generous patients.)

Higher market returns are associated with higher levels of donations and lower fund-raising efforts. The former finding is inconsistent with our

model of donations. For short-run market returns, this result suggests that investment earnings are associated with facilitating donations. If this result is substantiated by other evidence, perhaps hospitals should be viewing short-run returns differently than our model predicts and should be considering an increase in fund-raising activity in the presence of high short-run market returns. The latter finding is consistent with the view that investments in financial markets and not-for-profit hospitals may be substitutes. It is also consistent with a nonmaximizing, financial need view of fund-raising: that when hospital investments can earn relatively high rates of return, fewer donations are solicited through fund-raising.

Most results for control variables are as expected, or are at least plausible. The case-mix variable is significant, and again may be serving as an additional proxy for services that please donors. The consistent significance of case mix also suggests that it complements both returns and fund-raising efforts. Larger hospitals, religious hospitals, hospitals in higher-income areas, and hospitals with higher past profits are associated with higher levels of fund-raising efforts, although not with significantly more donations. More competitive areas (competitive in the output market, not necessarily for donations) are associated with higher levels of donations.

ANALYSIS OF MODEL SPECIFICATION

The results as presented hold for several alternative specifications of the model, with appropriate caveats concerning model identification. Two alternative specifications were analyzed in depth. The first alternative specification concerns the definition of donations. Donations may be in response to current services or special needs of the hospital (operating expenses) or in response to fund-raising efforts associated with development (capital formation). Many donations are in the form of bequests, reflecting donation decisions that may be made many years prior to the giving of the donation. Lags in variables, to account for the prior decision making thought to be characteristic of bequests, and to examine the specifications used by Frank and Salkever (1991), did not produce significantly different results. While for these California hospitals it may be the case that lags in information arrival are not associated with differential donations, it may also be the case that the time-series of data here is insufficient to determine the appropriate lag structure.

The data permitted the separation of restricted donations (typically larger amounts and bequests for capital formation) and unrestricted donations (typically for short-run operating use). Alternative specifications using each type of donation did not yield meaningfully different results. It may be that the

designation of sources of donations does not reflect differential motivations for giving donations. It may also be the case that this work still provides a narrow look into the market for donations. The market for donations is characterized by a lack of information on the part of donors about firms' returns, and a lack of information on the part of firms about donors' preferences. Most health care organizations are engaged in a number of activities that may interest donors but that are not widely publicized due to patient confidentiality and for other reasons. Donors themselves may have specific interests–such as community loyalty or idiosyncratic interests due, for example, to the care a family member received–which are very difficult for firms to observe. Fund-raising may reflect the cost of this matching process. In any case, while all of these complexities of the market for donations are beyond the scope of data available for this study, they merit further attention.

The second alternative specification concerns the definition of returns. It is not clear either from theory or from prior empirical work which of the five components of returns most appropriately reflects output from the view of donors. The provision of uncompensated care may be a public good output that appeals to certain donors. Price differentials (charging less than potential market prices in imperfectly competitive markets) may be a private good output that appeals to other donors. It was possible that empirical results would vary with the measure selected, since correlations among returns components were low. Alternative specifications using each of these types of returns (public and private) did not yield meaningfully different results. As with alternative donations definitions, it may be that separating returns into five components does not reflect differential interests to donors. It may also be the case that our work still provides a fairly narrow look into the true nature of the returns provided by not-for-profit hospitals. Failure to capture the hospital's effect on health status, quality of care, and access to care are all limitations of the available data.

A final note on model specification concerns the identification of the model. For identification purposes, a unique financial variable was selected for each equation based on a reasonable hypothesized relation to the dependent variable. To test for model sensitivity we tried all possible combinations of excluded variables; the key parameter estimates proved insensitive to the particular unique variable selected for each equation. As a consequence of the statistical insignificance of the factors included in the Donations and Returns equations, the identification of the model has not been completely demonstrated, and readers should view the results of these equations with caution. However, consistency in the key parameter estimates is reassuring.

If the simultaneous-equations bias introduced by the lack of demonstrated identification was large, the bias might have resulted in overestimates of the effectiveness of returns and fund-raising on generating donations. The results suggest that returns and fund-raising generate only 2 and 42 cents, respectively, in donations per dollar of effort. While not validating the identification of the system, the parameters do not appear to be substantially biased in an expected manner.

DISCUSSION

This article introduces a market return requirement to characterize the constraints that donors place on the not-for-profit hospital. The amount of donations received is related to the returns to donors that is observed directly as well as indirectly through the information provided by fund-raising efforts. This formulation is one way to incorporate the market for donations within a model of hospital behavior and to introduce the role of fund-raising efforts, which is usually ignored.

An important implication of the model is that the existence of donations as a source of financing influences the behavior of the not-for-profit hospital in specific ways. In responding to the implied requests of donors, hospitals are providing returns in the form of charity care, education, research, and other services. This relationship is in contrast to the rather general relationship between financing and behavior in the for-profit firm. In the for-profit case, investors are relatively indifferent about the products sold by the firm so long as shareholder value is maximized. One can argue that a fundamental distinction between the for-profit and the not-for-profit firm is that in the latter the investors have non-cash preferences. While the set of returns that we were able to measure may not capture the entire story, they do capture the spirit of the behavioral relationship expected.

An important motivation for this study is to inform the debate regarding the donations-return relation. The discussion is focused on whether returns cause donations (donations being the hospital's reward for producing the appropriate output). The empirical results presented here suggest a positive relation, but a relation that is not very large. Each additional dollar in returns is associated with only two cents in additional donations, suggesting that hospitals pay quite a high price for donations. The implication is that the hospital can increase donations by increasing donor-pleasing returns, but not by much. Another implication is that failure to provide donor-pleasing returns

will cause some diminution in gifts but not complete elimination, since the constant term in the donations equation is positive and significantly greater than zero. The result that the provision of returns does not yield anything close to an immediate dollar-for-dollar pay-off in terms of additional donations is apparent from the market for hospital services. If philanthropic markets worked in this way, we would observe many more hospitals financed solely or primarily by philanthropy.

Still, provision of returns is an important characteristic of the not-for-profit hospital. In addition to fulfilling its stated mission, the modern not-for-profit hospital is faced with an increasing number of challenges to fulfill missions being proposed in many communities. Failing to fulfill new or newly articulated missions could result in loss of tax-exempt status or other preferential treatment (Clement, Smith, and Wheeler 1994). To take this point one step further, the measure of donations used in this analysis may be biased by not including the implicit community donation of tax exemption. The value of tax exemption may not have been derived in proportion to returns, but it could be increasingly and explicitly related to returns in the future.

The model presented also has interesting implications regarding optimal fund-raising efforts of not-for-profit hospitals. Fund-raising efforts are not isolated financial activities. The fact that funds are donated because of returns as well as fund-raising efforts implies that in equilibrium donations are solicited beyond the point where the last dollar spent on fund-raising equals the last dollar of donations. Using the value of the insignificant coefficient on fund-raising in the donations equation suggests that the marginal dollar of fund-raising efforts yields only 42 cents in donations. However, hospital administrators should be cautious in taking this result to mean that they should not invest in solicitation efforts due to this analysis of short-run results. In addition to noting that the coefficient in this model was insignificant, managers should be aware that successful solicitation efforts reflect long-run campaigns aimed at making donors aware of hospital activities, and that large-scale fund-raising campaigns remain a relatively new activity for hospitals (Smith, Wheeler, and Clement 1995).

Although the issue that originally stimulated the debate–whether not-for-profit hospitals should be paid a return on equity–has long since been decided, the question of what donors specifically require remains important from both policy and managerial perspectives. For the manager of the not-for-profit hospital (and perhaps other not-for-profit firms), the model and results presented in this article provide some answers and some speculations. Clearly, for instance, hospitals that provide higher levels of community benefit

can expect to receive somewhat higher levels of philanthropic support. Also clear is the fact that additional expenditures on fund-raising are unlikely to generate additional donations net of the costs of fund-raising, at least at current levels. These two relationships, combined with our finding that hospitals providing high levels of community benefits are most likely to employ modest solicitation efforts, and vice versa, suggest the possibility of a better strategy then heretofore for increasing donations.

If hospitals were more commonly to combine the provision of community benefits with a campaign to elicit support for their efforts on behalf of the community (rather than to view them as substitutes), they might both enjoy a higher level of philanthropy and succeed in meeting their charitable purpose to a greater extent. This possibility, which is suggested but not supported strongly by our results, is one of the best hopes for the survival of the voluntary hospital sector. We believe this observation is central to the policy implications of our results. The finding that community benefits increase donations implies that people continue to view the not-for-profit hospital as an agency where they can invest their funds for a social purpose. But the magnitude of the relationship likewise implies that people expect the return on this investment to be small. If not-for-profit hospitals fail to convince their communities that they are worthy of financial support, their existence as charitable enterprises is uncertain. Indeed, without a demonstration of philanthropic support for the social product of the not-for-profit hospital, the public support for such an institution through tax exemption and subsidies is untenable.

Altogether, the findings suggest that, while the hospital should pay attention to community benefits and selectively engage in fund-raising, it should recognize that neither activity will result in substantial increases in cash flow, certainly not in the short-run. Instances of hospitals in financial distress being saved by generous donations are rare. What remains is for hospitals to focus on changing or improving their patient care activities as means of cash flow and community support.

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NOTES

1. Many models of philanthropic behavior consider donations that establish the enterprise but give little consideration to the operating decisions of the firm (Weisbrod 1977; Becker 1974; and Hansmann 1981). Models of the firm generally assume the existence of equity capital, ignoring the way it was obtained, and analyze only operating decisions. Some models have suggested that donations increase firm output (James 1983; Posnett and Sandler 1986; and Steinberg 1986). However, firms do not substantially alter their behavior to attract donations. Pauly (1987a) and Weisbrod and Dominguez (1987) have stated the need for models that more fully integrate these two sides of the market for donations.
2. While this model appears to characterize the firm as a quantity maximizer, $U(Q)$ may be such that Q is ordered by factors other than quantity. Along these lines, Rose-Ackerman (1987) adds a shift parameter to U for quality. We suppress any distinct quality measures and any concerns over the distribution of outputs to types of customers. Outputs of different qualities or provided to different types of customers can be viewed as separate outputs in such a way that within the relevant range of output/customer combinations there are no unconstrained local or global maxima for U. See Hansmann (1987) for a review of alternative characterizations of the nonprofit firm.
3. Bergstrom, Blume, and Varian (1987) have examined conditions for a model of donations where, in present notation, $D_i = 0$ for some persons. In this model we examine firm behavior, not the behavior of individual donors. Hence, the inequality $D_i > 0$ requires only that at least one person donate in response to the provision of services.
4. See Schiff (1985) and Steinberg (1987) for additional justifications for a partial crowding-out assumption. Rose-Ackerman (1983), on the other hand, considers the case where $D_G > 1$ because government spending may involve regulations that alter the behavior of the firm in ways consistent with the preferences of donors.
5. This article is limited to a single-period model in both the theoretical and empirical sections. Thus, no discounting is implied. While a multiperiod model would permit a more complex discussion, the applicability of such a model was limited in the empirical time series of only seven observations, and it is therefore not expanded upon.
6. If the translation B is expressed in terms of competitive prices, then $B(Q) = PQ$ and $B_{ii} = 0$. If $B(Q)$ is not simply PQ, or if the market is not competitive, then the value of output can vary by the level of output. James (1983) has argued that nonprofit firms operate where positive externalities exist so that price understates marginal social benefit. In the context of this model, this argument would imply that price understates (or misstates) the benefit of output to donors.
7. A potentially important but unavailable additional measure of fund-raising efforts and donations stems from related organizations called hospital foundations or

auxiliaries. Many hospitals have these related organizations to serve as a common point for fundraising and support (Smith, Wheeler, and Clement 1995). Transfers from foundations are included in the measurement of donations here, but the timing of transfers may distort the relation between the donation and the activity of the hospital. In an effort to match more closely all sources of donations, we requested IRS Form 990s from all California hospital foundations. However, the rate of availability of the forms was quite low (about one-third).

8. Independent measures of relative "risk" between financial market returns and hospital output as a return on donations are unavailable. Tax rates may also be important in the interpretation of financial market returns, but no clear measure that seems appropriate was found.

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