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Factors Accounting For Variations Over Time in Voluntary Support For Colleges and Universities

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INCOME from private giving has always been of crucial importance to American colleges and universities. Since the early history of Harvard in the mid-seventeenth century, voluntary support often has made the difference between institutional survival and extinction. Moreover, voluntary support frequently has provided the margin of excellence that separates one institution from another, that distinguishes the American system of higher education from the rest of the world.

Today, institutions of higher education continue to be dependent on voluntary support. In 1979-80, total voluntary support to higher education institutions was $3.8 billion, with 55.8 percent earmarked for current operations and the remainder for capital purposes. Most of this support came from foundations (24.2 percent), alumni (23.7 percent), nonalumni private parties (22.2 percent), and business corporations (18.2 percent); religious organizations (4.1 percent) and all other sources (7.6 percent) accounted for the remainder.[1] Approximately 20 percent of independent and 4 percent of public institution income was classified as coming from private gifts and grants.[2]

The current financial climate throughout higher education, marked by a relative decline in financial resources available to institutions, has highlighted the importance of voluntary support. In

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1. Council for Financial Aid to Education, *Voluntary Support of Education,* annual report (New York: Council for Financial Aid to Education, Division of Research, 1981).

2. Marilyn McCoy and D. Kent Halstead, *Higher Education Financing in the Fifty States, 1979* (Washington, D.C.: The National Institute of Education, in press).

some instances, particularly in the independent sector, private giving is helping to determine which institutions survive the current decade; in many other cases, it is assuming a critical role in balancing institutional budgets. In most institutions, both public and independent, voluntary support is needed to provide that element of vitality that is so essential to maintaining and enhancing institutional quality. For while the spending of governmental funds and other resources essentially has become prescribed and is closely monitored, much voluntary support can be expended with few constraints. Voluntary support has come to be the major source of real discretionary money to institutions, providing the resources that institutions need to introduce change and innovate, take risks, and invest in the future.

Most studies investigating factors influencing voluntary giving to higher education have focused on motivations for giving. Using surveys and opinionnaires, Hunter[3] and Ireland[4] found that donors give to causes from which they personally benefit or in which they are personally involved, and to causes that they deem worthy. Other researchers have used existing data to form mathematical estimations of motives for giving. Hochman and Rodgers,[5] for example, concluded that utility interdependence was an explanation of giving. Taussig,[6] Schwartz,[7] Feldstein[8] and McNees[9] examined the incentive of the charitable deduction. While Taussig discounted the incentive effect, Schwartz and Feldstein concluded that contributions were increased by the tax provision of deductibility. McNees, in his study of charitable bequests, presented arguments for tax credits rather than deductions.

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3. T. Willard Hunter, *The Tax Climate for Philanthropy* (Washington, D.C.: American College Public Relations Association, 1968).

4. Thomas R. Ireland, The Calculus of Philanthropy, *Public Choice* 7 (Blacksburg, Virginia: Center for the Study of Public Choice, 1969).

5. Harold M. Hochman and James D. Rodgers, "Utility Interdependence and Income Transfers Through Charity," K. Boulding, M. Pfaff, and A. Pfaff (eds.), *Transfers in an Urbanized Economy: Theories and Effects of the Grants Economy* (Belmot, California: Wadsworth Publishing Company, Inc., 1973).

6. Michael K. Taussig, "Economic Aspects of the Personal Income Tax Treatment of Charitable Contributions," *National Tax Journal* 20, no. 1 (March 1967):1-19.

7. Robert A. Schwartz, "Corporate Philanthropic Contributions," *The Journal of Finance* 23, no. 3 (June 1968):479-97.

8. Martin Feldstein, "The Income Tax and Charitable Contributions: Part I: Aggregate and Distributional Effects," *National Tax Journal* 28, no. E (March 1975):81-100; Martin Feldstein, "The Income Tax and Charitable Contributions: Part II: The Impact on Religious, Educational and Other Organizations," *National Tax Journal* 28, no. 2 (June 1975):209-26.

9. Stephen K. McNees, "Deductibility of Charitable Bequests," *National Tax Journal* 26, no. 1 (March 1973):79-98.

Nelson[10] and Cushman[11] studied factors influencing corporate and charitable donations. Nelson found that tax rate changes were significant in explaining giving variations and that the larger a corporation the greater the percentage of its income given. Cushman found that assets, income, the salary of the foundation officers, and high corporate rates of return were positively related to giving. He also found that a higher concentration of foundation assets in corporate stock was negatively related to private giving.

In spite of the urgency of concern about voluntary giving, there have been few studies examining the impact over time of economic factors and federal tax policies on overall voluntary support for higher education. Given the importance of voluntary support to higher education in the foreseeable future, research is needed that will improve the understanding of the factors accounting for variations in levels of financial support. A clear understanding of these factors would seem to be of high utility to educational leaders and decisionmakers.

Framework

The purpose of this study was to investigate both the overall and the relative importance of selected economic factors in explaining variations, over time, in levels of voluntary support to American colleges and universities. The economic factors were the level of economic activity, anticipated business conditions, the rate of return on investments, the price of goods purchased as well as the general price level, and the amount of government intervention in the economy.

After considering aggregate, annual giving, the analysis was divided into two components: share of individual and share of corporate income given to higher education. This breakdown was used because the literature suggests that individuals and corporate motives for giving may vary. Alumni (over half of individuals who give are alumni) seem motivated to give when they perceive particular institutional need and when they perceive an opportunity to help maintain or enhance educational vitality and social status.[12] Nonalumni giving, on the other hand, seems motivated by a more generalized and

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10. Ralph L. Nelson, *Economic Factors in the Growth of Corporation Giving* (New York: National Bureau of Economic Research and Russell Sage Foundation, 1970).

11. Frank J. Cushman, *Charitable Giving and Philanthropic Foundations: An Economic Analysis* (unpublished doctoral dissertation, University of Virginia, 1979).

12. Earl F. Cheit and Theodore E. Lobman, "Private Philanthropy and Higher Education: History, Current Impact, and Public Policy Considerations," *Research Papers* (vol. II) (Washington, D.C.: Department of the Treasury, 1977); Francis Pray, *Guide to Educational Fundraising* (San Francisco: Jossey-Bass, 1981).

impersonal view that collegiate institutions are important to the improvement of society.[13] Because direct measures of any of these motives are not readily available, especially over time, translation to the economic variables identified above was undertaken for purposes of the study.

If institutional need and advancement are the principal motivating forces for alumni giving, one would hypothesize that individual support would rise during difficult financial times when business conditions are relatively poor and institutional endowment earnings are depressed. On the other hand, standing theoretically counter to this hypothesis is classical economic theory, which ascribes more purely economic motives to economic man. In other words, classical economic theory would predict that individuals would give when the ability to give is high and the cost of giving is low, that is, during periods of relative prosperity. Clearly, both views have merit and undoubtedly both motives are exhibited among the many higher education donors. However, if the former motive is as prevalent as the literature suggests, one would expect that the coefficients of direct measures of economic activity would be negative in explaining annual levels of individual voluntary support, whereas if the latter motive is prevalent the signs would be positive. If the motives essentially balance out, the coefficients would approximate zero. Since individual giving comes primarily from alumni but also includes a fairly large proportion of nonalumni giving, a synthesis of the literature leads one to hypothesize negative coefficients of modest magnitude.

As regards corporate contribution behavior, if it is assumed that such donors have a more generalized view of reasons for giving to higher education,[14] the timing of that giving should be relatively moot. Thus, it would be expected that consistent with economic theory corporate giving should increase when the capabilities for giving are high and the costs of giving are low (that is, when business conditions are good). Accordingly, the coefficients for corporate giving would in most cases be positive and substantial.

Since alumni giving represents only about one-fourth of total voluntary support, for reasons stated above it would be expected that, on balance, variations in annual aggregated amounts given would conform most closely to classical economic behavior. If this is so, measures of economic activity would have positive signs and co-

13. Earl F. Cheit and Theodore E. Lobman, "Private Philanthropy and Higher Education: History, Current Impact, and Public Policy Consideratations," *Research Papers* (vol. II) (Washington, D.C.: Department of the Treasury, 1977).

14. *Ibid.*

efficients of moderate magnitude in the aggregate model. In conclusion, all three hypotheses are aimed only at focusing the analysis and guiding the discussion; the hypotheses represent syntheses of the extant literature and classical economic theory as applied to explaining voluntary support for higher education.

Sample

The sample included total contributions of nongovernmental gifts and grants to colleges and universities on a biennial basis from 1932 to 1966, and on an annual basis from 1968 to 1974. The contribution series was altered slightly after 1968 by the reclassification of a greater proportion of sponsored research and other sponsored programs as voluntary contributions. However, the reclassified amounts were very small relative to the total amount of contributions and did not appear to affect the results.

Variables

The dependent variable in the study was total giving (TG) to institutions of higher education from 1932 to 1974. Total giving refers to the total monetary value of nongovernmental gifts and grants to institutions of higher education, in millions.

The independent variables employed in the study were as follows:

BY — Yield on high-grade corporate bonds, average for the year, was used to measure the rate of return on investments (an indicator of the opportunity cost of giving).

CD — Implicit price deflator for the consumption component of the Gross National Product (GNP) measures the prices of goods purchased by individuals. It is an indicator of consumer price levels.

D — GNP implicit price deflator measures general price levels.

FS — Final sales, in billions, aggregate gross receipts for both private individuals and business enterprises and is a measure of business activity.

GNP — Gross national product, in billions, measures the level of economic activity.

ID — Implicit price deflator for nonresidential fixed investment component of GNP measures prices of goods purchased by businesses.

NY — National income includes income of employees, business owners, and landlords plus corporate profits and interest.

PRF — Corporate profits with inventory valuation adjustment, in billions, is a measure of corporate profits.

PS — Personal savings, in billions, is personal income less consumption expenditures.

PY — Personal income, in billions, is total personal income.

SP500 — Standard and Poor's 500 stock price index, yearly close, was used as an indicator of anticipated business conditions.

TAX — Government tax and nontax revenues measures the amount of government intervention in the economy.

Further, in order to isolate the affects on private giving of a particular variable the independent variables were adjusted according to the following formulae:

xNY — Variable multiplied by NY
xY — Variable multiplied by PY
xF — Variable multiplied by FS
xS — Variable multiplied by PS
xP — Variable multiplied by PRF

For example, one would expect that annual voluntary support of higher education would fluctuate with national income. By multiplying all independent variables by annual NY values, an estimate of voluntary contribution as a percentage of national income is obtained and the contribution of each independent variable in capturing this percentage is isolated.

Sources of Data

For the period from 1932 to 1968, biennial data from the *Biennial Survey of Education in the United States* were obtained from the *Statistical Abstract* for voluntary contributions. Between 1968 and 1974, annual data were taken from the *Digest of Education Statistics* (1980). Stock price and bond yield variables were obtained from the *Security Price Index Record* (1980), and all other data were collected from the United States Department of Commerce through the *Economic Report of the President* (1972, 1980).

Statistical Design

To explain why total voluntary contributions to higher education vary over time, ordinary least squares regression was selected as the most appropriate statistical procedure for the analysis. Time series regression analysis was utilized to determine what economic factors best explain total giving to higher education on a year-to-year basis.

The analysis proceeded in three steps. First, aggregated voluntary support was examined through a national income model. Second, a gross and a net receipts model were tested so that, third, individual and corporate submodels reflecting the hypotheses could be examined. The gross receipts model consisted of PY (personal income) and FS (final sales), and the net receipts model consisted of PS (personal savings) and PRF (corporate profits). Because the gross receipts model was found to be the more powerful, the individual and corporate submodels were constructed from the gross receipts model.

Findings

National Income Model

Equation (1a), which represented total giving as a share of national income (NY), was tested to estimate aggregated giving. The model encompasses all national income as opposed to the dichotomous gross and net receipts models.

$$\text{Equation (1a)} \quad TG = nNY + p$$

The proportion of individual income that is given to institutions of higher education is denoted by n. However, n does not remain constant over time, but fluctuates according to the movement of economic variables as follows:

$$\text{Equation (1b)} \quad n = aSP500 + bBY + cCD + eTAX + p \text{ (constant)}$$

This expression of n inserted into (1a) yields the national income model.

$$\text{Equation (1)} \quad TG = aSP500xNY + bBYxYN + cCDxNY + dDxNY + eTAXxNY + fNY + p$$

The two-step estimate of the national income model was as follows:

$$\text{Equation (1b)} \quad n = .0054\,SP500 + .073\,BY + 6.81\,CD - 5.23\,D - .0017\,TAX - .834$$

The share of national income given to higher education was positively associated with increases in stock equities (SP500), high grade bond yield (BY), and the implicit price deflator for the consumption component of GNP (CD). It was negatively associated with the implicit price deflator (D), government tax and nontax revenues (TAX). The negative coefficient on national income (NY) represents the constant term in equation 1b.

The estimate of total giving under the national income model, taking annual variations in national income into account, was as follows:

$$\text{Equation (1)} \quad TG = \underset{(1.80)}{23.73} + \underset{(9.14)}{.0054}\ SP500xNY + \underset{(5.57)}{.073}\ BYxNY$$
$$+ \underset{(4.70)}{6.81}\ CDxNY - \underset{(-3.67)}{5.23}\ DxNY$$
$$- \underset{(-3.50)}{.0017}\ TAXxNY - \underset{(3.71)}{.834}\ NY$$
$$R^2 = .999 \quad SE = 17.56 \quad RSS = 5551.5$$

In the national income model, the R^2 of nearly 1.0 indicates that the model is accounting for nearly all of the year-to-year variation in voluntary giving. All of the variables are significant in equation (1) for total giving. The most important variable is Standard and Poor's 500 (SP500), indicating a high positive relationship between annual stock price closings and total giving to institutions of higher education when annual differences in national income are controlled.

Second most important is the high grade bond yield (BY) variable, followed by the implicit price deflator (CD) for the consumption component of the GNP. As SP500, BY, and CD increase, total giving to higher education also increases. In other words, voluntary support of higher education increases with increases in stock equities, bond yields, and consumer prices—taking annual national income differences into account.

The other measure of inflation, however, shows a reverse pattern. When inflation is measured by the GNP deflator (D), which measures general (as opposed to consumer) price levels, the relationship is negative. That is, voluntary support of higher education increases, in relative terms, as general inflation decreases. The negative coefficient for the tax variable indicates that as tax collections increase, voluntary support decreases, as would be expected, when annual variations in national income are controlled.

Gross Receipts Model

To examine contributions through gross receipts, a model was tested with PY (personal income) representing the source of individual contributions and FS (final sales) as a proxy for the source of business contributions. While individual proprietors' income is included in both time series, this small overlap is insignificant in view of the small size of proprietary income as compared to total income and sales. It was assumed that a portion of these amounts (as indicated in the coefficients) are given to colleges and universities.

$$\text{Equation (2)} \quad TG = \epsilon_0 + \epsilon_{1t} PY_t + \epsilon_{2t} FS_t$$

A preliminary estimate of this model was conducted by specifying

the components of PY_t and FS_t. The preliminary estimate of these components found that the variables GNPxY, CDxY, GNPxF, and IDxF were not statistically significant. Testing for their joint significance produced an overall F-test of only .32 and the variables were eliminated as jointly insignificant. This yielded the following:

$$\begin{aligned}\text{Equation (2)}\quad TG = &-3.79 + 23.99\,PY - .095\,SP500xY \\ &(-.50)\quad (5.04)\quad\ (-5.48) \\ &-3.57\,BYxY - 46.51\,DxY \\ &(-3.51)\quad\ (-4.57) \\ &+ .156\,TAXxY - 19.47\,FS \\ &(4.71)\quad\ (-5.09) \\ &+ .080\,SP500xF + 3.02\,FYxF \\ &(5.59)\quad\ (3.64) \\ &+ 37.87\,DxF - .128\,TAXxF \\ &(4.67)\quad\ (-4.76)\end{aligned}$$

$R^2 = 1.000$ SE = 9.20 RSS = 1185.4
(parenthesized numbers are t-statistics)

The gross receipts model has high explanatory power, with the R^2 of 1.0 suggesting that the model is accounting for nearly all of the year-to-year variations in voluntary contributions to higher education. (It should be noted that a high R^2 is common in time-series analysis due to contemporaneous covariation.) Moreover, all of the variables in the model are significant (as indicated by t-values that are greater than $\pm$ 1.96) except for the constant term, which serves only as an adjustment to force the estimate through the means of the variables.

Net Receipts Model

The estimate of the net receipts model which later was rejected, was as follows:

$$\begin{aligned}TG = &\ 42.32 - 3.60\,PS - .027\,GNPxS - .088\,SP500xS \\ &(3.10)\ (-.38)\quad (-.25)\quad\ (-1.02) \\ &+ .834\,BYxS - 6.32\,CDxS + 26.63\,DxS \\ &(.32)\quad\ (-.19)\quad\ (.58) \\ &+ .057\,TAXxS - 13.40\,PRF - .011\,GNPxP \\ &(.18)\quad\ (-1.92)\quad\ (.21) \\ &+ .089\,SP500xP + 1.10\,BYxP - 8.77\,IDxP \\ &(1.95)\quad\ (.66)\quad\ (-.64) \\ &+ 34.08\,DxP - .017\,TAXxP \\ &(1.32)\quad\ (-.11)\end{aligned}$$

$$R^2 = .999 \quad SE = 23.10 \quad RSS = 5337.9$$

In the net receipts model, the only significant variable was the constant term. In comparison to the gross receipts model, the net receipts model has little explanatory power. Its standard error and residual sum of squares are much higher than those in the gross receipts model, diluting its power and leading to its rejection in favor of the gross receipts model.

Gross Receipts Model: Individual Submodel

To determine the share of total contributions by individuals over time, individual giving as it interacts with economic factors was separated from equation (2), forming the following:

Equation (3) ϵ_{1t} = constant term + $SP500_t$ + BY_t + D_t + TAX_t

The estimate of Equation (3) was as follows:

$$\text{Equation (3)} \quad \epsilon_{1t} = 23.99 - .095\ SP500_t - 3.57\ BY_t - 46.51\ D_t + .156\ TAX_t$$

As indicated in Equation (3), individual giving increases when stock equities, inflation, and bond yields are down and tax collections are up. Consistent with theory, both economic expectations and the rate of return enter negatively. As individuals expect lower asset prices (SP500) or get lower rates of return (BY), they give more, even though they presumably will have less to give. Perceived high institutional need is the suggested explanation. Inflation (D) reduces giving as is expected, but governmental intervention (TAX) has a positive effect, possibly since higher taxes induce individuals to give more as a tax shield—a reasoning more consistent with economic theory.

Gross Receipts Model: Corporate Submodel

To determine the share of total contributions by businesses over time, business contributions as they interact with economic factors were separated from equation (2), forming

Equation (4) ϵ_{2t} = constant term + SP500 + BY + D + TAX

The estimate of Equation (4) was as follows:

$$\text{Equation (4)} \quad \epsilon_{2t} = -19.47 + .080\ SP500 + 3.02\ BY + 37.87\ D - .128\ TAX$$

As shown in equation (4), business contributions increase when stock equities, inflation, and bond yields are up, and when taxes are lower. Improving business conditions, as reflected in stock prices (SP500), stimulate business contributions to higher education institu-

tions. The positive effect of the rate of return on high-grade corporate bonds (BY) violates the theory since bond yields represent a cost of doing business. The hypothesis as to the consequences of inflation (D) also is violated, but inflation may have an impact similar to rising bond yields, making voluntary contributions relatively cheaper for businesses. The negative effect of government intervention (TAX) seems to reflect the depressing effect of government taxation on business activity.

Comparison of the estimates in equations (3) and (4) suggests that individuals will give more if the returns they make on investments decline, while businesses respond in the opposite fashion. These findings are consistent with the framework section, which leaned toward an "institutional need" motivation for individual giving and a timing of corporate giving consistent with traditional economic motives.

Discussion

As higher education confronts the challenges of the 1980s, fluctuations in levels of voluntary support will have a major impact on the stability and health of institutions. In some cases, patterns of voluntary giving will determine which institutions survive the next decade; in a larger number of instances, voluntary support will determine whether institutions have sufficient resources to insure institutional vitality. Because private giving is critical to all postsecondary institutions, especially in the independent sector, a clear understanding of the forces influencing voluntary support will be very important. Such an understanding has major implications for individuals and institutions involved in financial planning and fund-raising.

In estimating aggregate amounts contributed annually to higher education, measures of economic activity, rates of return on alternative investments, prices, and tax levels were tested. Controlling for annual variations in total national income, it was found that the most powerful (and positive) predictor of giving to higher education was Standard and Poor's 500 measure of the equities market, followed by bond yields, and consumer prices. General price levels and level of government intervention (especially taxes) were less important (and negative) predictors. Even at this most aggregated level of analysis, this information should be useful in planning fund-raising strategies, particularly the timing of those strategies.

As a first step to understanding and explaining the aggregated statistics, total giving was viewed both from a gross receipts and a net receipts perspective. The analysis showed that donors appear to

be influenced more by the general state of economic activity, as indicated by gross receipts, than by net yields—corporate profits and personal savings. Again, these findings contain strategic messages for fund raisers and financial planners. Perhaps most important, they suggest that fund-raising efforts might be timed to coincide with the high points in each economic/business cycle.

To develop an encompassing strategy, however, more detailed information is needed unless there is reason to believe that all donors, in their giving behavior, share a common set of motives and respond similarly to economic conditions. The literature suggests no such common motives and reactions. Accordingly, the analytical approach used here was to disaggregate the gross receipts model, which had been found superior to the net receipts model, into individual and corporate submodels.

Alumni, who compose over half of individual donors, were known to give when need was perceived to be high, generally for personal rather than financial reasons. The individual submodel indeed would seem to suggest that the time to solicit individuals, alumni in particular, is when economic conditions are relatively poor. Most likely this is because potential donors perceive greater institutional need during these periods rather than for any reasons related directly to the economy *per se*. The implications of this submodel for financial planning, however, go beyond timing. The results, in combination with the literature, also suggest that fund-raising approaches targeted at individuals should emphasize institutional need, especially the need for individual support to maintain or enhance institutional quality and prestige.

The corporate submodel suggests a completely different strategy. Not only is the proper timing of corporate solicitation the reverse of (successful) individual timing, but so is the effective tack to pursue. In comparison with the individual submodel, the signs and the magnitudes of all the variables examined here were reversed. Unlike individual giving, levels of corporate support follow more closely from classical economic motivations. That is, corporate giving expands with economic conditions and inflation, but declines with government intervention (taxation). Accordingly, corporate solicitation would seem to be more successful when the corporate mood is optimistic—when the economy is bullish. The implied fund-raising strategy is to emphasize the state of the economy, the potential for continued economic growth, and the role of higher education institutions in that growth. Further, when government intervention declines through modifications in tax policies, the low net price of giving should be emphasized to potential corporate donors.

Clearly, there is no wrong time or strategy for fund-raising. This study suggests that the timing and designing of fund-raising efforts should be built on shifting emphases, on targeting individuals or groups depending on economic conditions and the likely effect a particular type of appeal may have. What is singularly surprising from this analysis is that fund-raising efforts aimed at each of the two foci, individual and corporate, should yield roughly equal results provided they are equally well conceived. As indicated by the size of the variable coefficients in the study, appropriate and well-designed appeals to individuals should be about as effective in hard economic times as similar appeals to corporations are in good economic times.