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Volume Title: Economic Factors in the Growth of Corporation Giving

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Volume Publisher: UMI

Volume ISBN: 0-87014-615-9

Volume URL: http://www.nber.org/books/nels70-1

Publication Date: 1970

Chapter Title: Economic Analysis of Corporate Giving

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Chapter URL: http://www.nber.org/chapters/c2859

Chapter pages in book: (p. 37 - 74)

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Economic
Analysis
of Corporate
Giving

THE RAPID growth of corporate giving from the late 1930's to
the early 1960's was accompanied by other significant economic
changes. The period saw considerable growth in corporate revenues
and profits and a decline in the after-tax cost or "price" of a dollar in
contributions. It was also marked by related changes in corporate atti-
tudes about the legality, appropriateness, and desirability of giving. It
is the purpose of this chapter to measure, if possible, the separate
contributions of each of these developments to the observed growth.

FACTORS AFFECTING CORPORATE GIVING

In the technical language of economics the effect of the level of
corporation activity on the amount of giving will be described as the
scale effect. The response of giving to the "price" of contributions is
referred to as the price effect, and the effect of changing attitudes is
described as a change in the preference or taste of corporations for
giving. Problems of identifying and interpreting each of the three
effects will be discussed in turn.

A convenient measure of the scale and price effects is furnished by
the concept of elasticity. In this perspective, the proportionate
change in giving is expressed as a ratio or percentage of the propor-
tionate change in price or the scale of activity. If the ratio is greater
than one, then giving is said to be elastic with respect to scale or price;
i.e., it shows a more than proportionate response to changes in these
variables. If the ratio is less than one, then giving is said to be inelas-

tic with respect to price or scale; i.e., it shows a less than proportionate response. Measures of elasticity thus focus directly on the relative degree of responsiveness rather than on absolute change. Whenever possible, in the analysis to follow, scale and price effects will be described in terms of elasticities.

The Scale Effect

In the theory of consumer behavior, the scale effect has been associated with the relative income levels of persons or families. Viewed as a form of consumption, philanthropic giving reflects the changing composition of spending experienced by families in successively higher income levels. Higher-income families devote a higher share of income to certain kinds of services and commodities than do lower-income families, and among these services are philanthropic contributions.[1] Recent theoretical explorations have treated giving as an element in the process whereby persons seek to maximize the satisfaction (or, in economic jargon, the utility) achieved by their spending.[2] In this treatment the voluntary redistribution of income involved in giving reflects the interdependence of individual feelings of well-being. Knowledge that others are better off is a source of satisfaction. Giving, in this context, represents an activity in which people achieve satisfaction by helping to better the lot of their less fortunate neighbors.

The extension of the concept of the scale effect to corporation giving suggests that the pattern of corporate spending changes in response to increasing size of revenues and expenditures in much the same manner as that of families. This anthropomorphic view of the corporation is at sharp variance with the view that the corporation is an engine of production that arranges its inputs to production with the objective of profit-maximization. It is legitimate to regard philanthropic contributions as an input in the profit-maximizing process, in

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[1] A number of empirical studies focusing on the relationship between the level of family income and the percentage of income "spent" on contributions have been made. Among these are ones by F. Emerson Andrews, in the *Saturday Review of Literature*, October 5, 1957; by C. Harry Kahn, *Personal Deductions in the Federal Income Tax* (Princeton, N.J.: Princeton University Press, 1960) pp. 73–87; by William Vickrey, "One Economist's View of Philanthropy," in Frank G. Dickinson, Editor, *Philanthropy and Public Policy* (New York: National Bureau of Economic Research, 1962); and by Michael Taussig, "The Charitable Contribution Deduction in the Federal Personal Income Tax" (Unpublished doctoral dissertation, Massachusetts Institute of Technology, 1965), 57–65.

[2] See, e.g., Kenneth E. Boulding, "Notes on a Theory of Philanthropy" in Dickinson, *Philanthropy and Public Policy*, pp. 67–71. Also Gary S. Becker, "Interdependent Preferences: Charity, Externalities, and Income Taxation" (Unpublished ms.).

the sense that they may directly or indirectly benefit the corporation and so contribute to long-run profits.

Although corporate giving is properly regarded as an input, there is little in the theory of the corporation to suggest what amount of giving might be optimal. It will be taken as a convenient working hypothesis that the size of giving, other factors taken into account, is proportionate to the size of corporate activity, that is, the scale elasticity of giving is one. This hypothesis will first be tested using aggregate annual data for the period 1936 to 1963. Then, later in the chapter, it will be tested by making cross-sectional analyses of giving and corporate size.

The measure of the scale of corporate activity used in the historical analysis is corporate net income after taxes. Although not wholly satisfactory in a number of respects, it probably provides as useful a measure of scale as most of the alternative measures. In scope of coverage it is coextensive with the corporate sector. Although not so good a measure as value added, income is highly correlated to that measure, and value-added data are simply not available. Sales data, for the corporate sector taken in the aggregate, are subject to serious errors of double counting, particularly over this period when the vertical relationships among corporations have undergone major changes. Finally, as pointed out in Chapter Two, both corporate and tax laws emphasize the net-income base for contributions. On these grounds, at least, income provides the operational measure of corporate size in the giving decision.

The Price Effect

The quantity of any input to production that is purchased by a corporation is determined, among other things, by its relative price. Contributions would be "purchased" in larger quantities if their price, relative to that of other inputs, is low, and in lesser quantities if their price is high. There are two dimensions to the price of corporate contributions. The first is associated with changes in the market prices of the services purchased with contributions relative to factor prices in general. The second is associated with changes in the tax rate on corporate income and so affects the net after-tax cost of a given dollar amount of contributions. Each will be examined in turn.

One can think of the contributions dollar as buying some combination of philanthropic services. With the passage of time, there may be divergent price trends for the several kinds of services included in

this "market basket" of philanthropy. If the relative quantities and unit prices of philanthropic purchases were known, then, in principle, a price index for giving could be computed. This, in turn, could be related to a broader index of factor prices or possibly to an even more general price index.

The conceptual and empirical problems of devising such a price index are formidable, and in large part insoluble. For one thing, contributions are most often made for activities the value of which cannot be even approximately measured. Their value to society is felt to be high, and so they are supported despite our inability to measure them. Second, gifts are frequently made on the condition that they be matched in a specified proportion by gifts from other donors. The price to the corporation is thus lower by a factor based on the matching condition, and, to the extent that the condition evokes gifts not otherwise forthcoming, the corporation has succeeded in having more of the service produced for its given contribution.

A third difficulty relates to the degree of benefit the corporation feels it derives from contributions. If there has been a change in the degree to which contributions redound to the specific benefit of the corporation, then this may affect the company's assessment of the "quantity" of services it is able to purchase with a dollar of contributions. It may consider directly beneficial contributions as representing a higher "quantity" per dollar of outlay than those of less direct and more general benefit to the company. Fourth, changes in the "technology" of producing social welfare, health, higher education, and other services may signify lower unit prices. These are particularly difficult to measure since such changes are often accompanied by changes in the quality of the services. It is, therefore, difficult for the donor to gauge the quantity equivalent of the contributions.

The index number problem is further complicated when there are significant changes over time in the relative quantitites of the services in the market basket purchased by corporate contributions. Such changes have evidently taken place (*Table 9*). The record for the period beginning in 1936 is not available, but that for the eighteen-year period from 1947 to 1965 suggests that the corporate donations market basket has shifted increasingly to higher education and away from health and welfare.

To summarize, the value to the corporation of its purchases of philanthropic services is likely to be hard to measure. Contributions may return a benefit to the corporation only after a delay in time and

TABLE 9   Trend in the Composition of Corporate Contributions, 1947–1965

Recipient	*Percentage of Contributions, Reporting Companies*				
	1947	*1955*	*1959*	*1962*	*1965*
Health and welfare	66.6	50.7	45.1	40.9	41.5
(federated drives)	(37.9)	(21.9)	(25.1)	(25.5)	(24.2)
Education	13.4	31.3	39.1	41.9	38.4
Civic and cultural	20.0 {	3.2	2.9	5.3	8.6
Other		14.8	12.9	11.9	11.5
	100.0	100.0	100.0	100.0	100.0
Number of companies reporting	71	180	280	465	540
Total contributions (millions):					
Reporting companies	$16.1	$38.3	$98.6	$154.1	$209.3
All corporations	241	415	482	595	*n.a.*
Reporting companies as percentage of all	6.7	9.2	20.5	25.9	*n.a.*

NOTE: More detailed breakdowns are presented in Appendix F.
SOURCE: *Reporting Companies:* National Industrial Conference Board: *1947: The Business Record*, January, 1950, pp. 18–19; *1955: Company Contributions*, Studies In Business Policy, No. 89, 1958, p. 11; *1959: The Business Record*, June, 1961, p. 12; *1962: Business Management Record*, October, 1963, p. 25; *1965: The Conference Board Record*, October, 1966, p. 45. *All Corporations:* U.S. Treasury Department *Statistics of Income, Corporation Income Tax Returns.*

often only in a very general way. For example, contributions to higher education will result in a more highly trained labor force only after a lag of some years. Further, the corporation may directly benefit only to the degree that it succeeds in attracting the trained personnel it had a part in educating. Indeed, a recurring theme in the literature of corporate philanthropy is that, while the return to the corporation from its support of "general welfare" projects cannot be precisely measured or directly assigned, it could be substantial. By aiding scientific research, the solution of social problems, or the elevation of cultural levels, the corporation may help to produce an environment which, in a variety of ways, is congenial to its survival and prosperity.

This brings us to the second dimension to the price of corporate contributions, the significance of tax deductibility. Because contributions are most validly classed among those expenditures whose returns are deferred, uncertain, and only roughly measurable, they are more closely related to spending on, say, institutional advertising or basic research than to spending on labor, material, machinery, or direct advertising and sales campaigns. As a result, the corporate income tax rate is likely to have much greater impact on decisions about the size of contributions budgets than considerations of a price index

for contributions. The longer deferred and more uncertain the return from expenditures for contributions, the more important is likely to be the immediate and certain tax saving that accompanies such expenditures, and the greater the weight given to their net after-tax cost.

Tax deductibility, therefore, is that aspect of the price of contributions included in the analysis. The price variable is defined as the net after-tax cost of a given dollar amount of contributions. For simplicity this will usually be expressed as the after-tax cost of one dollar in contributions. This is the same as the complement of the marginal tax rate expressed in percentage form.

The "price" of giving, so defined, is not the same for all corporations, since corporations may fall into income classes that place them in one of several marginal tax-rate brackets. The $495 million in corporate contributions for 1953, for example, was made by corporations paying one of four separate "prices" for their contributions. For companies with negative net income (or net loss) for the year, the price of $1.00 in contributions was $1.00, their marginal tax rate being zero.[3] For profitable corporations having less than $25,000 in net income, the price was $0.70, their marginal tax rate being 30 per cent. For those having more than $25,000 in net income but not subject to the excess-profits tax, the price was $0.48, and for those subject to the excess-profits tax it was $0.18.

Unfortunately, the Internal Revenue Service tabulations do not present data on gifts and contributions by income classes and so one cannot know how many dollars of contributions were made at each of the several "prices." For this reason it is not possible to compute a precise measure of the average "price" of contributions. A rough measure of the downward trend in "price" over this period of rising tax rates is presented in Table 10 below; the construction of this measure and an evaluation of assumptions and biases are described in Appendix Table VII. For most years the average "price" is the complement of the ordinary corporate income tax rate, as this is the "price" faced by corporations that accounted for the preponderance of corporate net income and contributions. In ten of the twenty-eight years some—but probably not complete—account is taken of the fact that a large part of corporate net income was earned by corporations

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[3] The price would be $1.00 for many corporations only through 1954. After 1954, a contributions deduction greater than 5 per cent of income could be carried forward for two years, to be offset against income in those years. Thus, only if a corporation had losses for three consecutive years would the "price" be 100 per cent of the contribution.

subject to the excess-profits tax, and who thereby faced a much lower "price" of giving.

Beginning in the late 1930's, when the "price" of $1.00 in contribution was first 85 cents and then 81 cents for most contributions, the "price" has shown a strong downward trend. The trend has not been a regular one, however. In the six excess-profits tax years spanning World War II, the "price" was sharply lower, reaching a low point of 28 cents in 1943. This period was followed by a four-year plateau in corporate income tax rates, during which the "price" of most contributions was 62 cents. The four excess-profits tax years spanning the Korean War produced a second sharp dip in the "price" of contributions. This then was followed by a ten-year plateau in corporate tax rates, from 1954 through 1963, during which the "price" of most contributions was 48 cents.[4]

This pattern may make it difficult to separate the price effect from the effect of the time trend in the preference for giving. It is possible that the rise in giving as a percentage of income, as described in Chapter Two, was in part the result of a ratchet process. In this process, the stimulus to giving produced by high excess-profits tax rates may have led corporations to make larger commitments to donees— commitments, which, once tax rates were lowered, were hard to reduce, but which were less burdensome to maintain than would have been the case had the "price" been restored to its pre-excess-profits tax level. If so, then what may appear to have been the pure effect of an upward trend in tastes may in reality have been partly a price effect. One may perhaps take comfort from the fact that the role of price in the development of tastes is a ubiquitous one, and so the problem is not unique to philanthropic contributions.

The Trend in Tastes and Other
Influences on Giving

As mentioned in Chapter Two, there appears to have been a considerable liberalization over the period in corporate attitudes toward the

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[4] Technically, some of the contributions made during 1963 were made at a higher "price," as corporation income tax rates were reduced effective January 1, 1964. However, only a small part of corporate net income was reported by corporations whose accounting year ended after December 31, 1963, i.e., between January 1, and June 30, 1964. The *Statistics of Income* for 1963 included all corporations whose accounting year ended between July 1, 1963 and June 30, 1964. In addition, since the tax rate was, in effect, an average based on the number of days the company operated under the old higher and new lower tax rates, the "price" change for any given corporation could only have been very minor, at most half of the 2 per cent increase for corporations whose accounting year ended June 30, 1964.

legality, appropriateness, and desirability of giving. Precise measures of the effects of this change on corporate behavior do not exist. However, the subject has received sufficient attention and discussion to warrant an attempt to determine whether it has made a significant difference in giving levels.

Affecting any inclination toward philanthropic giving on the part of corporation management is its awareness of the legal right of corporations to make contributions. Liberalization of this legal right in all likelihood reflected successful efforts by a number of corporations whose attitudes toward giving had changed. This in turn led to a more general corporate awareness of this right, which then may have played an expanded role in what we have chosen to call a change in preference or taste for giving.

Before 1936, common law precedents were few and presented little clear guidance whether or to what a corporation might make donations.[5] Specific state laws permitting corporations to make contributions did give explicit recognition to the right, but, before 1935, only seven states had enacted such laws. The Federal Revenue Act of 1935, which permitted deduction of contributions up to 5 per cent of income, probably gave support to a broader interpretation of existing state laws by designating contributions as a category of tax-deductible outlay separate and distinct from business expenses.[6]

As of 1940, only nine states had permissive legislation, the main pressure toward greater state permissiveness coming with World War II. By 1952 statutes permitting corporate giving had been enacted in 29 states and Hawaii,[7] and by 1959 this number had grown to 41.[8]

Liberalization of state laws was accompanied by more permissive interpretation by courts. Probably the most significant decision in this respect was that rendered in the case of a manufacturing company which made a $1,500-gift to Princeton University. In finding in favor of the corporation, and against the shareholders who had brought suit, the decision held that the boards of corporations may contribute for purposes which, in their judgment:

> Will conduce to the betterment of social and economic conditions,
> thereby permitting such corporations, as creatures of the State, to dis-

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[5] F. Emerson Andrews, *Corporation Giving* (New York: Russell Sage Foundation, 1952), pp. 229–233.

[6] *Ibid.*, pp. 233–239.

[7] *Ibid.*

[8] Bert S. Prunty, Jr., "Love and the Corporation," *Virginia Law Review*, April, 1960, p. 469.

charge their obligations to society while, at the same time, reaping the benefits which essentially accrue to them through public recognition of their existence within the economic and social, as well as within the legal, structure of society.[9]

To measure the effects of attitudinal change as separate from, though partly determined by, change in legal status, one ideally ought to have an independent and direct measure of attitudes, over time, and comparable from one period to the next. Unfortunately no data exist that would permit the construction of such a series. While the literature does not lend itself to the quantification of an index of taste or preference, a sampling might suggest something of the direction it has taken.

The general trend in corporate attitudes is summed up by the 1952 testimony of Frank W. Abrams, former Chairman of the Board of Standard Oil Company (New Jersey), in the A. P. Smith Case:

> During the forty years of my business career, I have observed a slow but steady transition in the attitude of corporate management from one of more or less exclusive preoccupation with self-interest to one of self-interest tempered with a broadening sense of social consciousness.

This more general attitude has been refined by a number of persons, perhaps most notably by W. Homer Turner, Executive Director of the United States Steel Foundation, and by Richard Eells. In a 1961 statement, Eells, who has written widely on the social and political rationale of corporate giving, made the case as follows:

> Every company—large or small—has an obligation to its shareholders, and to all the other interests it is bound to protect. Therefore it should use its support program as an instrument of corporate survival in a free society. . . . The major function of corporate giving . . . is to vitalize the defenses of a free society by active support of those private sectors that invigorate freedom.[10]

A more contemporary statement, reflecting the further development and enlargement of corporate attitudes is that by Dr. Frank Stanton, President of Columbia Broadcasting System, in Feburary, 1967, before the Arts Council of Columbus, Ohio. Dr. Stanton pointed to the sharply increased corporate support of higher education as in-

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[9] A. P. Smith Mfg. Co. & Barlow, et al. 26 New Jersey Super. 106 (1953).

[10] *The Changing Role of American Corporate Philanthropy*, Report on Midwest Public Relations Conference, University of Wisconsin, October 10, 1961 (Madison: University of Wisconsin Press, 1962), p. 16.

dicative of business' "broadened horizons and increased awareness [of the fact that] business is learning, along with every other sector of society . . . that it both nourishes and is nourished by all those other activities that give any society character, richness, variety and meaning." He asked whether the arts might not be "ultimately the meeting ground where liberal education and progressive business come together." Feeling that the arts might be the first place in which the vitality of individualism might be lost, he suggested that, "if this were to happen, no liberal education will save our kind of society and no business enterprise will long endure in what is left of it."

The liberalization of corporate attitudes toward giving, and its acceptance as a legitimate corporate function, is reflected in formalized policy-making and administration by increasing numbers of companies. Referring to his National Industrial Conference Board surveys of corporation giving patterns, John H. Watson III reported:

> In 1955, it was difficult to locate as many as 15 company policy statements on contributions during a nation-wide survey. During a 1965 statistical survey, however, copies of 45 policies were submitted to the Board without special request. . . .
>
> Today, between one-fourth and one-third of those companies having contribution programs have also established contribution committees, and thereby tie in contribution objectives with overall company goals. . . .
>
> The staff concerned, on a full-time basis, with the giving function is now larger than ever before. One-third of the 55 members on The Conference Board's Council of Executives on Company Contributions today spends a majority or virtually all of their time on the function. And among the larger companies represented in NICB surveys, two-thirds use a contribution budget.[11]

. Finally, mention should be made of less obvious, but nonetheless significant, pressures to contribute that have been brought to bear upon executives. One observer has identified two principal kinds; the first is described as "executive backscratching," and the second as pressures from government, particularly in the 1960's. He doubts, however, that companies often respond to such importuning if they do not see the social value of the suggested projects.

An attempt was made to measure the effect of attitudes toward giving through the use of a proxy variable. This variable was simply a series of successive integers from 1 through 28, assigned to the suc-

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[11] "Recent Company Contribution Trends," *The Conference Board Record*, National Industrial Conference Board, January, 1968, p. 4.

cessive years of the period, 1936 having a value of 1; 1963, a value of 28. Technically, this variable is a proxy for the effects of all long-run changes other than those specifically included in the analysis. Tastes are presumably, but not certainly, the most important of these other changes. If there were any other developments that took place in a relatively persistent and progressive pattern over the period, the trend variable would serve as a proxy for them also. Although no other such developments are apparent, it should be kept in mind that the trend variable may measure the influence of factors as yet unrecognized.

Anticipation of Tax Rate Changes

An additional explanatory variable was included in the analysis. This was a number that reflected the expectation that an excess-profits tax would be either enacted or repealed in the following year. If it were widely anticipated that this tax would be enacted, bringing with it a sharp reduction in the net after-tax cost of giving, corporations might defer gifts planned for the current year, give more the following year, and thus enjoy a reduction, over-all, in the after-tax cost of their giving. On the other hand, if a repeal of the excess-profits tax were widely anticipated, then corporations might move next year's planned giving ahead into the current year, while the cost of giving was still low. As will be shown in Chapter Four, the existence of company-sponsored foundations probably facilitated such responses. Serving as reservoirs into which contributions could be poured or from which they could be drained, these foundations made it possible for corporations to maintain a more uniform flow of contributions to their ultimate beneficiaries, while taking advantage of tax-savings in the timing of their deductions for contributions.

Inspection of the time series of corporate contributions suggests that this pattern of behavior took place. The excess-profits tax rate was sharply increased in 1940, and gifts from corporations with profits increased from $29 million in 1939 to $37 million in 1940. The tax was repealed in 1946, and gifts dropped from an unusually high 1945 total of $263 million to an unusually low 1946 total of $211 million. This came after seven successive annual increases since 1938. In 1947 gifts rose again to $238 million, a level more in line with their secular growth pattern. An excess-profits tax was again imposed in 1950, and gifts rose from an unusually low level of $220 million in 1949 to $250 million in 1950. The tax was repealed in 1954, and gifts dropped from an extremely high $491 million in 1953

to a very low $309 million in 1954. They returned to $410 million in 1955, slightly above their 1952 level of $396 million.

In the time-series analysis, the tax-change anticipations effect is measured through the use of a proxy variable (*Table 10*). The variable is assigned a value of one in all years except those adjacent to the enactment or repeal of the excess-profits tax. The variable was assigned a value of zero for the year preceding an enactment or following a repeal of the tax. It was assigned a value of two for the first year the tax was in effect after enactment and the last year it was in effect before its repeal. Although this treatment was rather crude, it was felt that, for present purposes, little would be gained from a more elaborate treatment.

The effect of expectations about the excess-profits tax probably should be regarded mainly as an irregular factor, unrelated to the longer-run forces making for permanent changes in the level of giving. The variable was included in the analysis principally to discount its influence, in order to measure the effects of the other variables more precisely.

The Profitability Effect

A corporation's disposition to make contributions is associated not only with the quantity of profits from which contributions might be drawn, but also with the rate of return on shareholders' investment, i.e., profits as a percentage of the corporation's net worth. The higher the profit rate, with all other factors equal, the more disposed will be the corporation's managers toward distributing a larger-than-normal share of profits to philanthropy. The converse applies for low profit rates. Profit rates move with the level or scale of profits, and so one would expect to find measured scale and profitability effects to be fairly similar in value. However, because shareholders' investment also changes over time, a given movement in profitability is not exactly proportional to that in profits. The difference in movements reflect the profitability effect.

To isolate the effect of profitability on contributions, net worth was included as a separate variable in the analysis. This was done in preference to using the ratio of profits to net worth as an explicit profitability variable.[12] Movements in net income, holding net worth con-

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[12] An important reason for adopting this treatment was to avoid the high intercorrelation which would exist between the profits (or scale) variable and the profitability variable, the latter being a fraction with profits as its numerator. This intercorrelation would complicate the interpretation of the regressions.

stant, represent like movements in the rate of return on investment. Therefore, the coefficient of the income variable, in equations also containing the net-worth variable, measures the response of contributions to changes in the rate of profit.

The net-worth variable used in the analysis was that for all net-income corporations as presented in *Statistics of Income*. It is on a book-value basis since it is derived from the balance sheet data provided on corporation income tax returns, and reflects the accounting conventions applied in determining income subject to tax. These data were deflated by the implicit price deflator for the gross national product, as were the contributions and income data. As will be seen below, the net-worth data have shortcomings which may seriously limit the significance of findings based on their use, although the biases are capable of at least crude evaluation.

TIME-SERIES ANALYSIS

Table 10 summarizes the aforementioned variables chosen to analyze the movement in contributions, and presents the annual data on which the analysis is based. The techniques of multiple regression analysis were used to describe the several relationships. In addition to relating contributions to the income (scale), price, trend, tax-change expectations, and profitability of the current year, they were also related to income (scale) and price of the preceding year. It was found that the current-year-only regressions contained significant levels of serial correlation, which were reduced to nonsignificant levels by the introduction of lagged price and income. The combined effects of current- and preceding-year price or income, keeping in mind their intercorrelations, could be interpreted as elasticities.[13]

The regressions were run in sequence, beginning with one explanatory variable and successively adding additional explanatory variables. Attention was focused on those changes in regression coefficients which helped to determine whether the coefficient measured only the relationship between giving and the variable in question or whether the variable indirectly reflected the effect of other variables with which it was correlated. The variables, with the exception of

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[13] The inclusion of the lagged income and price variables meant that the regression analysis was based on 27 instead of 28 observations, the current-year data for 1936 being omitted. Although data for 1964 has become available since the 1936–1963 regressions were run, it was decided, because of time factors, not to recompute the regressions to include 1964 data. As will be shown below, it is doubtful that the addition of these data would have changed the results in any significant way.

TABLE 10   Contributions of Net-Income Corporations and Related Economic Variables Used to Explain Their Behavior, 1936–1963 (Dollar values in millions of 1936 dollars)

Year	Gifts and Contri- butions	Net Income After Taxes, Before Gifts and Contributions	"Price" of $1 in Con- tributions	Trend	Expec- tation of Tax Change	Net Worth
1936	$ 27.0	$ 8,594	$0.850	1	1	$111,338
1937	27.8	8,288	0.850	2	1	108,351
1938	22.4	5,765	0.810	3	1	96,842
1939	28.7	7,772	0.810	4	0	109,039
1940	36.0	8,696	0.585	5	2	113,066
1941	51.6	10,162	0.322	6	1	115,542
1942	77.4	9,820	0.323	7	1	105,707
1943	118.8	9,927	0.283	8	1	104,733
1944	170.9	9,269	0.290	9	1	106,346
1945	188.1	8,410	0.336	10	2	103,404
1946	135.1	12,038	0.620	11	0	95,157
1947	136.2	13,145	0.620	12	1	97,074
1948	126.6	13,377	0.620	13	1	101,140
1949	118.8	11,531	0.620	14	2	105,397
1950	133.1	14,675	0.398	15	2	114,864
1951	170.1	12,088	0.327	16	1	114,402
1952	193.3	10,900	0.355	17	1	117,116
1953	237.4	11,162	0.360	18	2	120,285
1954	147.3	11,425	0.480	19	0	120,556
1955	192.6	14,188	0.480	20	1	133,970
1956	187.6	13,860	0.480	21	1	138,293
1957	180.5	13,081	0.480	22	1	135,700
1958	163.5	11,353	0.480	23	1	140,757
1959	198.4	13,174	0.480	24	1	149,103
1960	196.4	12,779	0.480	25	1	151,792
1961	206.1	13,479	0.480	26	1	158,868
1962	238.4	14,613	0.480	27	1	167,665
1963	259.6	15,758	0.480	28	1	175,725

trend and tax-change expectations, were expressed in logarithmic form so the regression coefficients could be directly read as measures of elasticity. The sequences of equations and tables of simple correlations among the several variables are presented in Appendix C.

The equations selected as most clearly significant are presented in Table 11. As mentioned above, income and price for both the current and preceding year were included among the explanatory variables. The equations in Appendix C show that the current year's income generally had much more significant regression coefficients than did the income of the preceding year. Because of the high correlation between the two measures, only current-year income was included as the income variable in the first of each pair of equations in Table 11. By

TABLE 11 Relationships Between Corporation Giving and Explanatory Variables

Dependent Variable	Constant Term	Scale and Profitability Elasticity Coefficients[a]	Price Elasticity Coefficients[b]	Expectations (E) or Net-Worth (NW) Coefficients	Trend Coefficients	Adjusted R-Squared	Von Neumann Ratio
SCALE VARIANT							
$\log GC =$	−0.75	+1.05 $\log Y$ (4.08)[c]	−1.03 $\log P_{t-1}$ (9.08)	+0.055 E (1.96)	+0.016 T (4.83)	0.93	1.48
$\log GC =$	−2.44	+0.97 $\log Y$ (3.65) +0.46 $\log Y_{t-1}$ (1.72)	+0.34 $\log P$ (1.58) −1.26 $\log P_{t-1}$ (6.59)	+0.078 E (2.44)	+0.012 T (3.32)	0.94	1.93
PROFITABILITY VARIANT							
$\log GC =$	+6.01	+0.81 $\log Y$ (3.17)	−0.90 $\log P_{t-1}$ (7.86)	−1.20 $\log NW$ (2.81)	+0.029 T (5.24)	0.94	2.64
$\log GC =$	+7.33	+0.66 $\log Y$ (2.46) +0.04 $\log Y_{t-1}$ (0.14)	−0.28 $\log P$ (1.30) −0.66 $\log P_{t-1}$ (2.99)	−1.48 $\log NW$ (2.68)	+0.033 T (4.03)	0.94	2.26

[a] Coefficient of simple correlation between $\log Y$ and $\log Y_{t-1}$ = +0.77.
[b] Coefficient of simple correlation between $\log P$ and $\log P_{t-1}$ = +0.78.
[c] T-ratios in parentheses.

contrast, the preceding-year's price was found to have much more sig-
nificant regression coefficients than current-year price and, again be-
cause of the high intercorrelation, only it was included. For purposes
of comparison, equations including both current and lagged income
and price variables are also presented.

Scale and Profitability Elasticities

Table 11 tends to confirm the expectation that the scale elasticity
of giving has a value close to unity. In the first equation the elasticity
of giving with respect to the current-year's income was +1.05. Al-
though the second equation yields an elasticity of +0.81, there is
some reason to believe that it is understated. Because the second equa-
tion includes net worth as a separate variable, the regression coeffi-
cient for the income variable measures the effect of profitability in-
stead of the pure effect of income or scale. Income and net worth
move together, and the intercorrelation is high enough $(r = +.6)$
so that some of the purely scale effects may have been reflected in
the coefficient of the net-worth variable.

On somewhat different grounds, the net-worth effect may be over-
stated (and the scale effect understated) because errors in the net-worth
measure probably lead to an understatement of its true variability.[14]
This produces a higher measure of net-worth elasticity and a cor-
respondingly lower measure of income elasticity.[15] It is of interest to
note that the observed income elasticity (+0.81) is about as far be-
low unity as the net-worth elasticity (−1.20) is above unity. One
can only speculate about how much closer together these might be
brought if a more adequate measure of net worth had been available.
The negative sign of the net-worth coefficient is what one would ex-

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[14] Reasons for the understatement are related to change in the accounting
treatment of corporate assets over the period and to the use of the gross national
product implicit deflator to put the net -worth data on a constant-dollar basis. The
basic net-worth data are those contained in the United States Internal Revenue
Service's *Statistics of Income*. They are on a book-value basis and, over the period,
probably increasingly reflect historical cost valuation. Inventory valuation has in-
creasingly reflected the wider use of Last In–First Out cost accounting, and depre-
ciation policies have increasingly emphasized accelerated depreciation patterns.
The use of a price deflator based on current-year product prices, when applied to
asset data containing fixed assets of varying ages and costs of acquisition, prob-
ably leads to overdeflation. Both biases lead to an understatement of the growth
and variability of the net-worth series.

[15] For a discussion of the statistical basis for this evaluation of effects of bias,
see Mordecai Ezekiel and Karl Fox, *Methods of Correlation and Regression Anal-
ysis*, 3rd edition (New York: John Wiley & Sons, 1959), pp. 311–317.

pect. That is, the larger the shareholders' investment, net income being held constant, the lower the rate of return and the lower the giving rate.

The scale variant equation, containing both current- and preceding-year income, also suggests that the scale elasticity is close to unity. Although the two regression coefficients add to considerably more than unity (1.43), when the relatively high intercorrelation ($r = +.77$) is considered, the "net" scale effect is well below the total. In summary, the findings suggest that, when other factors are taken into account, the growth in the scale of corporate activity as reflected by income has tended to increase giving in the same proportion. For an explanation of the rise in the ratio of giving to income over the period, the effects of other factors will have to be examined.

Examination of the income coefficients in two equations in the profitability variant of the analysis suggests a profitability elasticity of less than unity. However, as mentioned above, it is difficult to separate profitability from scale effects; this problem is compounded by deficiencies in data, particularly in the net-worth variable. Differences in regression coefficients for the income variable between the scale and profitability variants might be taken as reflecting the profitability effect. These differences suggest that the effect is not large.

Perhaps a low profitability effect is what one might expect. Corporations might regard periods of high or low profit rates as basically temporary departures from their normal or long-run rates, and giving might be related more to the long-run than to the current rate. It could likewise be argued that giving might be related more to the long-run than to the current absolute amount of net income. However, corporate decisions might be more directly affected by the amount of profits presently available for distribution than by the rate of return on investment that these profits signified. This would be the case, for example, in corporations that have adopted a policy of giving a more or less constant percentage of profits. Such rule-of-thumb calculations may be fairly important, if not explicitly stated, in many corporate-giving decisions.

Price Elasticity

The regressions indicate that giving responded to changes in the marginal tax rate (complement), which affected the immediate after-tax cost or "price" of making gifts. Moreover, the response ap-

peared to be proportionate to the relative change in price, the elasticity coefficients having values ranging near -1.0. As shown in Appendix Table XI, price elasticity measures were only slightly affected by the addition of explanatory variables other than price, suggesting that the coefficients were fairly pure measures of the price effect. Moreover, taken separately, the two price coefficients exhibited very high degrees of statistical significance.

What was unexpected in the analysis of the price effect was the very significant relationship found between giving in one year and the price in the preceding year. Also unexpected was the degree to which the introduction of preceding-year price reduced the effect of current-year price. As mentioned above, each measure of price, taken separately, showed an elasticity of close to -1.0, and was statistically significant. However, when both price measures were included in the regression, the elasticity coefficient for the current-year's price fell to a low value, was as often positive as negative, and, in all cases, was not statistically significant. By contrast, the elasticity coefficient for the preceding-year's price retained a value near -1.0, and in all cases remained highly significant.[16]

The greater significance of preceding-year over current-year price regressions may in part reflect the introduction of the tax-change expectations variable into the analysis. As one would expect, the four episodic movements in tax-change expectations were accompanied by large concurrent (and opposite) changes in price. The expectations variable was thus more highly correlated with current-year price ($r = -.373$) than with preceding-year price ($r = -.034$). The current-year price variable in equations also containing the preceding-year price variable had positive regression coefficients only when the expectations variable was included in the equation.[17]

This pattern may be seen in Table 11. In the scale variant equation, which contains the tax-change expectation variable, the current-year price regression coefficient is positive ($+.34$). In the profitability variant equation, which does not contain the tax-change expectations variable, the current-year price coefficient is negative ($-.28$). In

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[16] One other effect of the inclusion of preceding-year price in the regression was to remove the serial correlation present in all of the regressions in which this variable was not included.

[17] This statement is based on those equations which demonstrated no significant degree of serial correlation at the 5 per cent level of significance (see Appendix Table XI).

both equations the coefficients of the current- and preceding-year price variables add to a negative value slightly below one.

The precise mechanism by which the price effect results from the joint operation of current- and preceding-year prices evades simple explanation, and the correlation analysis is too broad to describe the pattern of this process. The broad findings, however, do suggest a price elasticity of giving somewhere near minus one. In this, the findings are in general accord with what the earlier discussion implied about this price elasticity.

To summarize, like other inputs to production, the quantity of contributions purchased is determined by the benefits that the corporation feels it derives from them. However, the projection of the return from philanthropic outlays is especially subject to problems of futurity and uncertainty, and so the immediate and certain tax savings that accompany contributions are likely to weigh more heavily in the decision. The observed elasticity coefficients suggest that tax savings have, in fact, weighed heavily in decisions to give.

Expectations of Changes in
   Excess-Profits Taxes

The variable depicting expectations of changes in the excess-profits tax shows a positive and statistically significant effect on gifts and contributions. As shown above in Table 10, the values given in this variable are arbitrary. They do not attempt to describe the intensity or consensus of expectations, which may have varied from one wartime period to another. Nonetheless, this variable was found to have some separate significance, which would seem to justify its inclusion in the analysis. Moreover, despite the possibility that this variable has made it more difficult to isolate current- and preceding-year price effects, it probably has led to less ambiguous measures of the income, price, and trend effects.

Trend in Tastes and Other Influences
   on Giving

The separate effect of progressive changes in "other" factors, as reflected by the trend variable, was found to be substantial and statistically significant. There were, of course, high positive correlations of the trend variable with the giving, income, and net-worth variables, and a moderate negative correlation with the price variable. However,

in the multiple regression equations, where the net effects of each var-
iable were separately measured, the trend variable exhibited con-
sistently high and significant values. This indicates that the passage
of time, and the developments associated with it other than those
mentioned above, made an important independent contribution to
the growth in giving.

The regression equations in which the net effect of the trend are
most clearly measured are those showing the least evidence of serial
correlation. The eight equations having nonsignificant Von Neumann
ratios (5-per-cent level of significance) are presented in Appendix
Table XII. The T-ratio for the trend variable for these equations in all
cases was statistically significant, ranging in value from 3.32 to 9.99.
The compound annual percentage rate of growth indicated by the re-
gression coefficient ranged from 2.8 per cent to 8.1 per cent, with a
median value of 5.7 per cent.[18] This suggests that, over the twenty-
seven-year period, factors other than income and price were respon-
sible for a more than 300 per cent increase in gifts and contributions.

These findings lend support to the argument that changes in cor-
porate attitudes toward giving played a major role in its growth over
the period. The attitude changes reflected in the statements of
corporate officials cited above on pages 44 through 47 apparently repre-
sented much more than lip service to worthy goals. Such stated atti-
tudes, progressively more receptive to notions of the legality, desirabil-
ity, and appropriateness of giving, appear to have been accompanied
by an equally strong change in corporate behavior.[19]

While attitudinal change may have been a major proximate cause
of the growth in giving, it, in turn, may have reflected a number of in-
direct developments that showed progressive change over the period.
Some of these developments, particularly of a legal and social nature,
have been mentioned above. Another one that comes to mind is the
increased governmental support of public higher education, which

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[18] As presented in Appendix Table XII, the regression coefficients of the trend
variable ranged in value from .012 to .034. The coefficient represents the year-to-
year change in the logarithm $_{10}$ of giving, other variables held constant. Ex-
pressed as antilogs, the coefficient is thus equivalent to the ratio of giving in a
particular year to that in the preceding year. This ratio is the same as one plus
the annual compound growth rate expressed in decimal form.

[19] A comparison of the findings of this time-series analysis with one conducted
independently by another researcher is presented in Appendix E. Both are based
on essentially the same data and method, but with significant differences in data
treatment. The comparison reveals more fully the reasons the particular data
treatment here adopted produces less ambiguous measures of the effects being
examined.

TABLE 12   1963 to 1964 Change in Contributions, Corporate Income, and Price, Corporations with Net Income (Dollar values in millions of 1936 dollars)

	1963	1964	*Percentage Change*
Gifts and contributions	$ 259.6	$ 283.5	+9.2
Net income after taxes, before gifts and contributions	15,758	18,103	+14.9
Net after-tax cost or "price" of $1 in contributions	0.48	0.50	+4.2

may have had an indirect effect on the increased corporate support of private colleges and universities. Certainly, the argument that private higher education must remain strong to provide balance, innovation, and variety in higher education, in the face of rapidly expanding public programs, has figured prominently in fund-raising appeals.

Changes from 1963 to 1964

As mentioned above in note 13, data on 1964 corporate giving, income, and tax rates became available shortly before the final editorial revisions were made in the text and well after the regression analysis had been made. It was possible to include the 1964 data in the descriptive sections of the study, and in the statistical appendixes, but not in the regressions.

To determine whether the inclusion of 1964 data in the regressions would have materially changed them, comparisons of 1964 to 1963 variables are presented in Table 12. The percentage change in gifts and contributions (+9.2) is somewhat less than the combined effect of scale (income) and price, which, if elasticities of, respectively, plus-one and minus-one are assumed, would predict an increase in gifts and contributions of 10.1 per cent.[20]

One reason for the lower realized increase in gifts and contributions may have been expectations of the tax reduction in 1964. This may have led some corporations to move some of their giving ahead into 1963, thus making for a lower 1963–1964 increase. However, the "price" change was not large. In any event the 1963–1964 patterns of change are sufficiently close to those described by the 1936–1963 regressions to reassure one that, were 1964 data included in the regres-

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[20] This is the product of the percentage change in income and price, computed as follows (1 +.149) x (1 −.042) which equals 1.101 or, in percentage terms, 100 per cent plus 10.1 per cent.

sions, the findings would have been substantially the same as those presented in Table 11.

CROSS-SECTIONAL ANALYSIS

The cross-sectional examination of corporate data was made to illuminate influences on corporate contributions that are not directly measurable in time-series analysis. These include the relationship between giving and such things as the size of corporations, their individual profitability, and the degree of capital- or labor-intensive production. Not measurable were the effects of such time-related factors as changes in tax rates ("price") and in the propensity to give.

As in the time-series analysis, the technique of multiple correlation was employed. Data were assembled for 121 industry classes in manufacturing, as presented by the Internal Revenue Service in the *Source Book* for its *Statistics of Income*.[21] The financial statements for 1954–1957 were combined to minimize the distortion contained in data for only one year. The period spans virtually the whole business cycle that had its initial trough in August, 1954, its peak in July, 1957, and its final trough in April, 1958.[22] As the contributions, profits, dividends, etc. of the several industries are affected in different degrees through the cycle, a full cycle was used to minimize what, for present purposes, would be spurious variation in the data.

The analysis was limited to the relatively homogeneous manufacturing sector because it was felt that intersectoral differences might obscure the effects of the variables examined if the other industrial sectors were covered. Not only were the corporations in the manufacturing sector somewhat alike with respect to their production operations, but there was a large enough number of industries (121) on which to base the statistical analysis.

Some notion of the variety among sectors is given in Table 13. Here it can be seen, first, that there was a large variation in the size of corporations (as roughly measured by average annual income). Average annual income ranged from $5 thousand for corporations in the service industries to $182 million for those in manufacturing. In addi-

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[21] The *Source Book* contains balance sheets and income statements for more detailed industry categories than those published in the *Statistics of Income*. The *Source Book* was generously made available to the National Bureau by the Internal Revenue Service.

[22] More exactly, the period includes the four returns filed by corporations having tax years ending on July 1, 1954, through June 30, 1958. As calendar-year filing is the most common period adopted by corporations, it is both substantially correct and descriptively convenient to designate the period in calendar years.

TABLE 13 Gifts and Contributions as Percentage of Corporate Income and of Distribution of Corporate Income, All Corporations and Eight Major Industrial Sectors, 1954–1957

	Average Annual Before-Tax Income per Corporation (in thousands)	Gifts and Contribution as Percentage of:				
		Corporate Income		Distributions of Income Measured as:		
		Before Tax	After Tax	Contributions and Dividends	Contributions, Officers' Compensation, and Dividends	
All corporations	$ 56.4	0.88	1.61	2.77	1.59	
Agriculture, forestry, and fisheries	13.1	0.98	2.09	2.50	0.87	
Mining, quarrying	96.5	0.66	1.52	0.85	0.73	
Construction	14.2	1.67	3.40	10.68	1.31	
Manufacturing	181.6	0.96	1.94	3.14	2.10	
Public utilities	177.8	0.51	1.04	1.14	0.98	
Trade	18.1	1.42	2.80	6.21	1.61	
Finance, insurance, and real estate	38.5	0.52	0.68	1.87	1.17	
Services	5.0	1.56	3.25	6.02	1.25	

SOURCE: U.S. Internal Revenue Service, *Statistics of Income, 1954, 1955, 1956–7, 1957–8,* pp. 44–51, 31–38, 25–32, and 31–38, respectively.

tion, there was great variation in the percentage of income distributed
as gifts and contributions. Measured relative to after-tax income, this
percentage ranged from 0.68 per cent for the finance, insurance, and
real estate sector to 3.40 per cent for construction.[23]

The basic data used in the correlation analysis were first converted
to logarithmic form. This was done so that the calculated relation-
ships between giving and the several explanatory variables could be
interpreted as measures of elasticity. Estimating equations containing
from one to six independent variables were computed (*see Table
14*).[24] Table 14 includes the T-ratios of the regression coefficients so
that the statistical significance of each variable may be assessed. The
relationship of each variable to contributions will be discussed in turn.

Corporate Size

An aspect of corporate giving that has received some attention is
the broad empirical finding that, as corporate size increases, the per-
centage of income given declines. The pattern was described for 1948
by F. Emerson Andrews, who offered the following rather striking
comparison: "The 601 giant corporations [over $100 million in as-
sets] appear to have given in 1948 only one-quarter as much of their
profits as the half million corporations with assets below $1 mil-
lion."[25] A parallel tabulation for 1957 reveals much the same relation-
ship (*Column 7 in Table 15*). Taken at face value, these findings im-
ply that the largest corporations are less generous, relative to their
income available for giving, than are the small ones.

This finding is particularly surprising in the light of what is known

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[23] The meaning of the income measure itself is subject to interpretation. As
will be shown later in detail, the accounting measure of income as provided in
corporate income tax returns may not be fully equivalent to the return to in-
vested capital as usually conceived. For example, some of this return may be
found in the compensation of the company's officers, whose salaries may contain
elements of return on capital. When contributions are related to distributions of
income, under the alternative assumptions that officers' compensation is or is not
a distribution of income (rather than a payment for labor services), the ratios
of contributions to income for the seven major sectors are significantly re-
ordered (*Table 13*).

[24] Of the six explanatory variables used in the multiple correlation, five were
taken from the *Source Book* for *Statistics of Income*, cited above. One, employ-
ment, is derived from the periodic *Census of Manufactures*, and so is available
for 1954 only; U.S. Bureau of the Census, *Census of Manufacturers, 1954*, Volume
I: *Summary Statistics*, Chapter IV, pp. 204–1 through 204–23. The matrix of sim-
ple correlation coefficients underlying Table 14 is presented in Appendix D. A
seventh variable, net income after taxes, was originally included in the analysis.
It was not included in Table 14 because, in the cross-sectional data in which tax
rates were substantially equal for all corporations, it was very highly correlated
with before-tax income.

[25] F. Emerson Andrews, *Corporation Giving*, Table 4, pp. 44–45.

TABLE 14 Regression Equations Relating Corporation Giving to Successively Larger Numbers of Explanatory Variables, Logarithmically Transformed[a] (Cross-sectional data)

Equation	Constant Term	Number of Corporations	Income	Net Worth	Employment	Officers' Compensation	Dividends	Coefficient of Multiple Determination (R^2)
A	$X_1 = 481,397$	$+ .549\,X_2$	$+ .675\,X_3$					.225
B	$X_1 = 10,747$	$+ .231\,X_2$	$+ .517\,X_3$					.636
C	$X_1 = -11,447$	$+ .223\,X_2$	$+ .470\,X_3$	$+ .171\,X_4$	$+ .266\,X_5$			.642
D	$X_1 = -86,471$	$+ .127\,X_2$	$+ .418\,X_3$	$+ .105\,X_4$	$+ .270\,X_5$			.663
E	$X_1 = 49,054$	$+ .504\,X_2$	$+ .111\,X_3$	$+ .366\,X_4$	$+ .210\,X_5$	$- .591\,X_6$		.730
F	$X_1 = 99,357$	$+ .423\,X_2$		$- .210\,X_4$	$+ .253\,X_5$	$- .253\,X_6$	$+ .709\,X_7$	.837

T-Ratios

Equation		Number of Corporations	Income	Net Worth	Employment	Officers' Compensation	Dividends	
A		5.880	11.536					
B		3.304	4.136					
C		3.197	3.815	1.423	2.679			
D		1.645	3.766	0.875	3.020			
E		5.096	1.181	3.090	3.009	5.341		
F		5.445		1.852		2.671	8.681	

[a] Based on cross-sectional data for 121 manufacturing industries for the four-year period, 1954–1957.

Definitions of the variables presented in the above table:
$X_1 =$ Total Gifts and Contributions of Corporations in the Industry, 1954–1957 (Log_{10}).
$X_2 =$ Number of Corporations in the Industry, 1954–1957 (Log_{10}).
$X_3 =$ Total Compiled Net Profit Before Taxes, Corporations in the Industry, 1954–1957 (Log_{10}).
$X_4 =$ Total Net Worth of Corporations in the Industry, 1954–1957 (Log_{10}).
$X_5 =$ Employment in Manufacturing Establishments Classified in Industry, 1954 (Log_{10}).
$X_6 =$ Officers Compensation of Corporations in the Industry, 1954–1957 (Log_{10}).
$X_7 =$ Total Dividends Paid, Corporations in the Industry, 1954–1957 (Log_{10}).

TABLE 15 Gifts and Contributions as Percentage of Corporate Income Variously Defined, and Sales, by Size of Assets, Active Corporations, 1957

| Asset Size Class | Dollar Values (Millions) | | | | | | Contributions as Percentage of Income Defined as: | | | Contributions as Percentage of Sales (10) |
	Gross Sales (1)	Officers' Compensation (2)	Contributions (3)	Before-Tax Income (4)	After-Tax Income (5)	Dividends (6)	Before-Tax Income (7)	Officers' Compensation, Contributions, and Dividends Paid Out (8)	Officers' Compensation, Contributions, Dividends and Retained Income (9)	
Under $.025	$ 4,999	$ 713	$ 1.17	$ −139	$ −179	$ 58	—	0.15	0.22	0.02
$.025 to .050	8,195	775	1.49	34	−41	28	4.38	0.19	0.20	0.02
.050 to .100	18,082	1,261	4.61	337	149	68	1.37	0.35	0.33	0.03
.100 to .250	44,759	2,186	14.87	1,072	579	182	1.39	0.62	0.53	0.03
.250 to .500	43,961	1,584	19.13	1,212	649	193	1.58	1.07	0.85	0.04
.500 to 1.00	42,171	1,220	25.39	1,386	690	248	1.83	1.70	1.31	0.06
1.00 to 2.50	49,844	1,141	36.49	2,179	1,059	438	1.66	2.26	1.63	0.07
2.50 to 5.00	33,365	636	28.85	1,939	988	419	1.49	2.66	1.75	0.09
5.00 to 10.00	30,778	493	30.56	2,056	1,004	479	1.49	3.05	2.00	0.10
10.00 to 25.00	40,320	493	44.28	3,516	1,842	950	1.26	2.98	1.86	0.11
25.00 to 50.00	26,247	282	28.51	2,485	1,310	726	1.15	2.75	1.76	0.11
50.00 to 100.00	35,345	218	29.89	3,131	1,696	1,155	0.95	2.13	1.54	0.09
100.00 to 250.00	46,812	249	36.36	4,878	2,617	1,875	0.75	1.68	1.25	0.08
250.00 and over	138,383	420	113.48	20,808	12,084	7,982	0.55	1.33	0.90	0.08

SOURCE: U.S. Internal Revenue Service, *Statistics of Income, 1957–8, Corporation Income Tax Returns* (Washington, D.C., 1960), Table 4, pp.39–40.

about the attitudes toward giving expressed by the leaders of large corporations, some of whom were cited above. Certainly, it runs contrary to the widely held belief that the large corporations have been in the vanguard of the liberalization in corporate thinking and behavior in giving. For these reasons and others, the statistical bases of these comparisons were examined in some detail.

One source of bias in the comparison is that the understatement of corporate income may be systematically greater the smaller the company. This bias in income data has been treated more fully elsewhere.[26] In brief, it arises from the inclusion of a return on invested capital in the compensation of the corporation's officers and executives, as well as the salary received for services. The smaller the corporation, the more common it is for its officers to own all or most of the company's stock, and the greater the latitude of these officers in deciding the form of their own compensation. Where both corporate and individual income taxes are involved, there may be significant tax savings if earnings on capital are in the form of salary rather than dividends.

To illustrate the effect of this bias, contributions have been expressed as a percentage of corporate income more broadly defined. Variously included in the two new definitions here presented are officers compensation, and other income components such as dividend payments, retained earnings, and contributions (*Table 15, Columns 8 and 9*). On both definitions of income, the percentage of contributions shows a sharply different relationship to size of company from the one reported above. Corporations in the lowest asset size classes show extremely low giving rates, and the rate is generally higher for the larger corporations than for the smaller. It rises progressively from the smallest size classes to the $5- to $50-million asset range, and then falls off somewhat for the largest asset size classes.

Another kind of bias could arise from the fact that smaller corporations typically might employ relatively more labor than large ones. Corporate profits, which mainly represent payment for the services of capital, might thus represent a smaller part of total factor payments for small than for large corporations. If giving is based on total factor payments or on the total activity of the corporation, it would be a higher percentage of income (the payment to capital) for small corporations. If one were to express the contributions of corporations

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[26] Joseph L. McConnell, "Corporate Earnings By Size of Firm," *Survey of Current Business*, Washington: U.S. Department of Commerce, May, 1945, pp. 6–12.

as a percentage of their payments to all factors of production (not just to capital), then one might observe a different relationship between giving rate and size.

The evidence suggests that there indeed may be a different relationship. Giving measured against *total* corporate activity rises as corporate size increases. Taking a corporation's gross sales as the measure of its total activity, Column 10 of Table 15 shows that contributions as a percentage of gross sales are generally higher for larger corporations than for smaller.[27] The giving rate, thus measured, rises regularly from the smallest corporations to those in the $10- to $50-million asset range and then falls off a little for those having more than $50 million in assets. Using sales as the measure of size, one could say that, as a general rule, the larger the corporation, the more "generous" it is.

The multiple correlation analysis provides another means for identifying the relationship of size to giving. To answer the question whether the giving percentage is higher for large than for small corporations, we shall seek to determine the scale elasticity of corporate giving. If an elasticity of less than 1 is found, then, other things being equal, a 10 per cent increase in size would mean a less than 10 per cent increase in giving and could be interpreted as evidence that large corporations give proportionately less than small ones. On the other hand, if an elasticity of more than 1 is found, this could be interpreted as evidence that large corporations give proportionately more than small ones.

As in the time-series analysis, the scale variable used in the regressions is income. However, the scale effect represents the relationship between giving and corporate size, assuming that other factors, particularly the rate of return on investment, are held constant. In this analysis, therefore, the scale effect is measured by assuming equiproportionate changes in income and investment, investment here measured by net worth. Thus the scale elasticity is measured as the sum of the income and net-worth coefficients, holding the number of corporations constant. In equations C and D of Table 14, the elasticity is 0.6 to 0.7.

The reasons this may be an understatement were given earlier;

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[27] A stronger case might be made for measuring contributions relative to value added rather than sales, since value added is a more direct measure of a corporation's separate contribution to economic output. Unfortunately the Internal Revenue Service data are not classified in ways which permit the computation of value-added measures.

namely, the income variable is affected by the composition of officers' compensation, which varies with the size of the corporation. Since the average size of corporations varied widely among the industries used in the cross-sectional analysis, some allowance was made for this effect by including data on officers compensation in the correlation as a separate variable. On a simple correlation basis, as shown in Appendix D, it was positively correlated with each of the other variables in the analysis, and so its influence would be indirectly reflected in the regression coefficients of other variables.

In the multiple regression equations *E* and *F*, the beta coefficients of the officers' compensation variable were negative. This deserves some explanation. The figures in Table 15 suggest that the component of officers' compensation representing return on capital, rather than payment for labor services, declined rather sharply as corporate size increased. The table also suggests that, as one rises through successively larger corporate size classes, the pure salary component of officers' compensation probably increases somewhat less than in proportion to corporate size. Presumably the level of compensation for individual officers is subject to greater limitations than the size to which companies can grow. Multiple regression techniques were used to take into account these biases in the gross measure of officers' compensation and so provide a better measure of the effects of size, income, and other factors. The negative beta coefficient suggests that the regression techniques accomplished what they were intended to do.

Were it possible to measure the pure salary part of officers compensation, it could show a negative relationship to giving in the multiple equations, other variables held constant. Officers compensation is a deduction from income, and the higher its value, for corporations of the same size, the lower the corporation's income. Assuming equiproportionate changes in income, net worth, and officers' compensation, the officers' compensation element would represent a negative component in measuring the scale effect. It is not likely, however, that this negative regression coefficient would be very large.

If it were possible to separate out the return-to-capital component of the officers' compensation data, and to assign it to the income variable, the new income variable thus created would vary much less than the one used in the analysis. The regression coefficient for the new income variable would therefore be higher. The combined income and net-worth (i.e. scale) elasticity in equation *E* of Table 14 is

+.784. Moreover, the size of the officers compensation coefficient
(−.591) suggests that its effect in overstating the variability in in-
come has been considerable. What the measured scale effect would
be, had it been possible to use a more precise measure of income, is
difficult to assess. However, when allowance is made for the biases
described above, the inference of a scale elasticity not far from +1
appears to be reasonable. If so, then it is in rough agreement with that
found in the time-series analysis. That is, both findings suggest that
larger corporations are neither more nor less generous, relative to
their income, than are smaller ones.

Profitability and Giving

One might expect that, in their allocation of funds to contributions,
corporate officials would pay particular attention to the profits per-
formance of the company, i.e., how much the company was earning
on the investment of its shareholders. The directors of a company
with a high return on investment might feel at greater liberty to dis-
tribute some profits to charitable causes than those in a company with
a low return on investment. This is so because the high-profit com-
pany has relatively more resources available for all kinds of spending,
including philanthropic contributions. Higher contributions might
thus be acceptable to shareholders who, at the same time, may be
receiving higher dividends and observing a higher reinvestment of
earnings, with its consequences of rapid growth in the value of their
investment.

The correlation analysis of the relationship between giving and
profits presented above covered the four-year period 1954–1957. This
time period was chosen partly because it bears a reasonable opera-
tional connection to the experience of corporations. In the long run,
rates of return on investment would tend to equality in an economy
with high capital mobility, assuming no systematic relationship be-
tween long-run risk differences and giving. However, in a period of
less than five years, a measurable variation in profit rates among
companies might be expected. Such variation could be used in ex-
plaining the giving performance of companies.

The coefficients of the profits variable (X_3) can be interpreted as
a measure of the responsiveness of giving to the *rate* of profit, i.e., the
profitability of corporations. Profitability is measured as the rate of
return on invested capital; in this analysis it is the ratio of net profits

to net worth (X_4). Because one of the variables included in the estimating equation is net worth, the coefficient of the profits variable reflects the change in giving when all other variables, net worth included, are held constant. Thus a 10 per cent increase in profits, holding net worth constant, signifies a 10 per cent increase in profits as a percentage of net worth.

The responsiveness (elasticity) of giving to profitability, as estimated by the multiple equations excluding the last equation, ranges between .42 and .52. This is roughly in accord with the low-profitability elasticities suggested in the time-series analysis. As pointed out in that examination, corporations might regard high- or low-profit rates as essentially short-run departures from normal rates, and giving might be related more to long-run than to short-run profitability.

While the four-year period covered in the cross-sectional data is long enough to encompass a business cycle (and thus long enough to eliminate some of the distortion that might be found in annual data), it is still a relatively short period—short enough to discourage either low-profit or high-profit firms from basing their giving decisions exclusively on the profit patterns observed in the period.

Employment and Giving

The number of persons engaged by a corporation may be an important factor in the determination of the amount it decides to give. The more employees a corporation has, the more it may feel some responsibility for the welfare of the communities in which they reside. That this has explicit recognition has been demonstrated by surveys of corporation giving.[28] Contributions to local community chest and hospital drives are often based, in important part, on the percentage a company's employees represent in total community employment. Many corporations have college scholarship programs for employees' children, and, in a fairly recent development, some corporations have programs whereby the corporation matches employee alumni gifts to colleges. The changing patterns of contributions described in Chapter Two probably reflect the development of employee-related programs to a considerable degree, particularly in the field of corporate support of higher education.

The hypothesis that a corporation's giving rates are positively re-

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[28] See, e.g., Andrews, *Corporation Giving*, pp. 47–48, 84–85, and 114–115.

lated to the number of its employees was tested by including data on employment in manufacturing industries (for 1954) in the multiple correlation analysis.[29]

If there were no relationship between number of employees and giving, the coefficient of the employment variable (X_5) should be zero. If, on the other hand, the number of employees were the sole determinant of the amount given, then one might infer that the co-efficient of X_5 would be 1. That is, if a corporation's giving were rigidly based on a fixed number of dollars per employee, one would observe giving to rise in direct proportion to employment.

The observed coefficient of the employment variable is positive and significantly greater than zero (+.270). This value predicts that a corporation with 10 per cent more employees than another having the same dimensions in all other respects (size, profits, officers' compensation) will give 2.7 per cent more in contributions. The coefficient thus provides some notion of the importance of the number of employees in a corporation's giving. Accounting for a 27-per-cent part of what would be a fully proportionate response, it must be numbered among the more important factors determining a corporation's giving level.

Dividends and Giving

The contributions of a corporation represent a distribution of its earnings to persons and institutions other than its shareholders. The benefits to the company and its shareholders of these gifts is often indirect and possibly long deferred. Therefore, in the context of immediate and measurable gain, a company's contributions are a subtraction from the shareholders' claim on its earnings. This, of course, is not always so. In many cases, the gain to the company and ultimately to the shareholders far outweighs the cost of the gift. For example, corporate support of hospitals in communities in which a large pro-

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[29] Industry employment data came from the Bureau of the Census, whereas data on corporate profits, net worth, contributions, etc. came from the Internal Revenue Service. The two sets of data are not wholly comparable, as the Census data are based on the manufacturing *establishments* classified in the given industry group, while the Internal Revenue Service data are based on *companies*. Where a company has a number of establishments, some falling in one industry group and some in others, the Internal Revenue Service assigns it to the industry group of greatest activity. Neither the degree nor the direction of the bias introduced into the present analysis from this source is known. However, it is likely to be small, as the industry groups are quite broad, and the number of companies having operations in more than one group—operations which account for a significant part of the activities of each of the several groups—is likely to be few.

portion of residents work in the company's plant may so reduce costs of labor absenteeism, for health reasons, as to more than repay the cost of supporting the hospital. And, indeed, much of the judicial support of the legality of corporate giving is based on the argument that the corporation does in some sense realize some value from the gifts it makes, and this undoubtedly has much influence on corporate giving policies.

In addition, the extent to which contributions reduce dividends may be operationally insignificant. Contributions represent only a minor fraction of corporate earnings distributions—for all corporations less than 3 per cent of dividends and contributions combined (*Table 16, column 4*). The percentage varies considerably among the major industrial sectors, but in no sector is it more than 11 per cent. Moreover, some of the larger percentages may reflect the inadequacy of the dividend data in describing the distribution of earnings. The sectors having the three largest percentages are construction, trade, and services, in which the average corporation size is small. As was shown earlier, smaller companies more commonly tend to distribute earnings as part of officers compensation and place less emphasis on dividend distributions. To the degree that officers compensation represents a distribution of profit rather than a pure payment for services, gifts as a per cent of gifts plus dividends overstates the importance of gifts in total distributions of earnings.

To demonstrate this bias, gifts have been expressed as a percentage of the total of dividends, officers compensation, and gifts (*Table 16, column 5*). This of course is an overadjustment, as much of the officers compensation is true payment for services. However, there was no feasible way of separating out the "dividend component" of officers compensation. Even though the percentage of gifts to total distributions of earnings is now understated, the percentages for the various industrial sectors are more comparable. The percentages for construction, trade, and services are now the same general size as the other groups, and the relative variation among sectors is much lower. On the broader definition, therefore, the substitution of contributions for dividends is on the order of about 2 per cent of dividends.

In the multiple correlation analysis presented in Table 14, an attempt was made to directly determine the effect on contributions of dividend payments. This was done by including dividends as one of the explanatory variables (*Equation F*). The appearance of the dividends resulted in sharp changes in the estimating coefficients for the

TABLE 16 Gifts and Contributions as Percentage of Total Distributions of Corporation Earnings, All Corporations and Eight Major Industrial Sectors, 1954–1955 through 1957–1958
(Dollar values in millions)

Industrial Sector	Annual Averages of			Contributions as a Percentage of Distributions	
				Distributions Measured as:	
	Dividends Other Than Own Stock (1)	Officers' Compensation (2)	Gifts and Contributions (3)	Contributions and Dividends (4)	Contributions, Officers' Compensation and Dividends (5)
All corporations	$13,615	$10,459	$388	2.77	1.59
Agriculture, forestry and fisheries	47	90	1	2.50	0.87
Mining and quarrying	761	124	7	0.85	0.73
Construction	84	668	10	10.68	1.31
Manufacturing	6,769	3,475	220	3.14	2.10
Public utilities	2,413	4,061	29	1.14	0.98
Trade	999	3,054	66	6.21	1.61
Finance, insurance, and real estate	2,364	1,451	45	1.87	1.17
Services	177	721	11	6.02	1.25

SOURCE: *Statistics of Income, 1954, 1955, 1956–7, 1957–8,* pp. 44–51, 31–38, 25–32, 31–38 respectively.

profits and net worth variables, and noticeable changes in the other variables. Whereas the coefficients of equations having successively more variables up to this point had appeared to evolve in a rather orderly manner, the introduction of dividends drastically reordered the estimating equation. The observed estimating coefficient of the dividend variable was very high (+.709).

Two interpretations of this pattern present themselves. The first is that the influence of dividends is clearly of a lower order of magnitude than scale of operations and profitability. If so, then the observed change assigning more influence to dividends is primarily statistical. The intercorrelations between dividends and income (scale) is high (+.871), as is that between dividends and net worth (+.885). When dividends were added to the equation it was therefore the idiosyncrasies of multicollinearity, rather than the discovery of a significant new explanatory variable, that produced the change.

The second interpretation is that, considered in their short-run operational context, the dividend and contributions decisions are likely to produce parallel short-run changes in these two distributions of corporate income. Corporate managements may be reluctant to increase contributions if, at the same time, they decide not to increase dividends. While it is true that contributions amount to only 2 or 3 per cent of dividends, management may fear some loss of stockholder good will if it became known that contributions were increased while dividends were not. Although both distributions are primarily determined by longer-run factors, in a cross-sectional, short-run comparison, the parallel movements in the two, for the reasons cited above, might assign to dividends a more pervasive causal significance than they actually have.

The qualitative evidence on this issue is mixed. In his survey of shareholder attempts to limit contributions by corporations, John H. Watson III found that

> The vast majority of stockholders approve the practice—at least by default—since relatively few either endorse or complain about management's decision. But those who do complain are usually aggressive in stating their disapproval. They demand and get management attention. . . . On balance, however, the playback from stockholders praises company contributions.

Watson qualifies his review, however, in the following way:

> But despite the present success of corporate management in administering the company's contribution policy to the satisfaction of all but

a minority of its stockholders, every management acknowledges it must be cautious in exercising control. For no one responding to the NICB survey ruled out the possibility that less prosperous times might bring challenges from more formidable stockholders.[30]

SUMMARY

The effects of the scale of corporate operations could be measured using both time-series and cross-sectional data. Both analyses estimated a scale elasticity of close to $+1$. This suggests that, by virtue of size alone, large corporations give neither more, nor less, in proportion to their size than do small ones.

The correlation analyses based on time-series data suggested that the price elasticity of giving had a value of close to -1. Price was here measured as the complement of the marginal tax rate, and so represented the after-tax cost of $1 in giving. The observed elasticity suggested that the immediate and certain tax reduction that results from contributions was a significant factor in the giving decision. This was plausible, particularly when the assessment of the other benefits from contributions must necessarily be very uncertain.

The analysis assigned considerable significance to the growth in corporate giving propensity, i.e., to an increased and more widespread acceptance of its legality, appropriateness, and worth. After taking separate account of price and scale effects, progressive changes in the effects of other factors, of which the change in giving propensity was judged to be the most important, were found to be very significant. Changes in other factors, thus measured, accounted for a more than 300 per cent increase in gifts and contributions (constant dollars) over the twenty-seven-year period 1936–1963.

Both the time-series and the cross-sectional analyses suggested a rather low degree of responsiveness of giving to changes in the rate of return on shareholders investment (profitability). The finding seemed plausible. Corporations might regard periods of high or low profit rates as temporary, and might, therefore, relate giving to their longer-run profit rates. Probably more important in the immediate operational context, giving might be most directly related to the absolute amount of income as, for example, it is under the tax regulations. If so, considerations of rate of return are a step removed from the central decision variables.

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[30] "Corporate Contributions Policy," *The Conference Board Record,* National Industrial Conference Board, June, 1967, pp. 12–14.

The relationship between giving and employment was measured, using cross-sectional data. The correlation analysis found a significant association between the relative degree to which corporations used labor in production and the level of giving. Prior examination of giving patterns had found much of corporate giving to be employee-related. Contributions to community fund drives are frequently based on quotas determined by the number of the company's employees in the community. More recently, educational grants for employees and their children have received increased emphasis.

Finally, the cross-sectional analysis brought out a significant association between contributions and dividend payments. Probably both forms of corporate income distribution reflect a common cause, namely the income (or scale of activity) on which they are both based. However, the degree of the association suggests a possibly significant degree of short-run interrelationship. Possibly corporate management would not feel justified in increasing contributions with no concurrent increase in dividends. This, despite the fact that contributions represent only 2 or 3 per cent of dividend payments.