Why Do Corporations Give to Charity?*

American corporations contribute over $3 billion to charity each year. These contributions finance a broad range of activities, including health and welfare services, education and research, culture and the arts, and various civic activities.1

Why do corporations contribute? Previous studies have attempted to answer this question within the context of profit maximization and managerial discretion.2 However, at the theoretical level, none of these studies develops a formal model that satisfactorily portrays the contributions process.3 At the same time, the empirical efforts have been hampered by the lack of firm-specific data. Perhaps as a result of this data constraint, previous empirical studies have relied

This paper explores whether corporate contributions should be tax deductible within the more general context of an examination of the profit and utility maximization motives driving contributions. The theoretical section develops a formal structural model of the contributions process, illustrates comparative statics, and derives a set of empirically testable hypotheses. Using a new source of firm data, the empirical results indicate that profit maximization is an important motive driving contributions. This finding supports the current tax-deductible status of contributions (up to a seldom encountered ceiling) and favors a reform that allows firms to treat contributions as ordinary business expenses.

---

* I am indebted to Richard Carson, Jeffrey Dubin, Malcolm Harris, Joseph Kalt, and especially Richard E. Caves for many helpful comments and criticisms. The paper also benefitted greatly from the comments of two excellent referees and from presentations at the Industrial Organization Seminars of Harvard University and the University of California, San Diego. All errors and omissions are, of course, my own.

1. Over 70% of corporate contributions go to education and research (41%) and health and welfare (31%). The remainder is split fairly equally between arts and culture and civic activities. See Troy (1984).


3. The most rigorous attempt is that of Maddox (1981).

(Journal of Business, 1988, vol. 61, no. 1)
© 1988 by The University of Chicago. All rights reserved. 0021-9398/88/6101-0001$01.50
primarily on IRS industry data to focus their attention on estimation of the income and tax rate elasticities of contributions. While this approach generates information useful for predicting future contribution levels and measuring the sensitivity of giving to tax policy and the business cycle, it has left unanswered the broader question of why individual firms contribute.

The answer to this question does, however, have important implications for federal tax policy as well as for the broader ideological struggle over the legality and social desirability of contributions within which the tax policy debate has occurred. On one side of the debate, conservatives have argued that legalizing corporate contributions has sanctioned a flagrant abuse of shareholder property rights at the same time that granting tax-deductibility status to contributions has encouraged an inefficient use of corporate and, by extension, societal resources. Implicit in this critique of contributions is, of course, the assumption that firms give to charity for reasons other than profit maximization, such as to satisfy the goals of shirking managers rather than those of shareholders. For if this assumption did not hold, both shareholders and the productive force of society would benefit.

On the other side of the debate, liberals have argued that corporations have a social responsibility to contribute that transcends any obligation to shareholders. Concerned more with social welfare and income redistribution than shareholder rights or efficiency losses, this camp was first instrumental in legalizing contributions and, over the years, it has vigorously supported the maintenance and extension of the tax-deductibility status of contributions. Like their conservative counterparts, liberals also implicitly assume that contributions serve a function other than profit maximization, but in this case it is an eleemosynary one.

Profit maximization is, however, a testable assumption, and it is the purpose of this paper to make that test within the context of a more general examination of corporate contribution motives. The paper’s

4. Maddox (1981) overcame the lack of firm data by conducting her own survey (with John Siegfried) of 166 firms. The most recent study, that of Clotfelter (1985), is devoted almost entirely to estimating these elasticities from industry data (ch. 5).

5. Until as late as 1953, corporate contributions that did not yield a "direct benefit" to firms (e.g., increased profits) were per se illegal. See, e.g., Old Mission Portland Cement Co. v. Helvering, 293 U.S. 289 (1934). The direct benefit doctrine was overturned by a New Jersey Supreme Court decision and upheld by the U.S. Supreme Court in A. P. Smith Manufacturing Co. v. Barlow et al., 13 N.J. 145, 98 A.2d 581 (1953). The Revenue Act of 1936, § 23 (q), 74th Cong., 2d Sess., ch. 690, p. 1661, first permitted corporations to deduct contributions (presently made for direct benefit) up to, but not exceeding, 5% of this net income. A classic statement of the conservative position may be found in Friedman (1962), pp. 132-36.

6. See, e.g., Andrews (1971), p. 120.

7. For a good history of the liberalization of corporate contribution tax policy, see Fremont-Smith (1972).
major theoretical contribution in Section I is to provide a formal structural model of the contributions process that treats the paradigms of profit maximization and managerial discretion as complementary rather than competing. On the basis of a revised specification of Oliver Williamson's classic managerial discretion model (1963, 1964), the theory also argues for a reversal of the implied positive relation of tax rate changes to tax-deductible preferred expenditures (e.g., corporate contributions). Section II presents an empirical model that is based on the theory, and Section III presents the results of estimating that model. The implications of these results for tax policy and the legal status of contributions are examined in a concluding section.

I. The Theoretical Model

A. Profit Maximization

To consider the profit motive, it is useful to distinguish between revenue enhancement, cost reduction, and tax considerations.

1. Demand considerations. On the revenue side, profit-maximizing managers may use corporate contributions tactically as part of an overall advertising strategy designed to promote a product directly or, alternatively, to promote the firm's image. One purpose of such advertising, which provides an additional goodwill attribute favored by some customers, is to enhance revenues by shifting, or decreasing the elasticity of, the demand curve for the firm's product. To formalize these demand side effects, assume that managers choose a level of product output, $Q$, and contributions, $G$, so as to maximize

$$\pi = PQ(P, G) - C[Q(P, G)] - G,$$

where $\pi$ equals profits; $Q$ is a function of $G$ and the price, $P$; and production cost, $C$, is a function of $Q$. The first-order conditions may be written as

$$P + Q \frac{\partial P}{\partial Q} = \frac{\partial C}{\partial Q},$$

and

$$P \frac{\partial Q}{\partial G} = \frac{\partial C}{\partial Q} \frac{\partial Q}{\partial G} + 1.$$

8. An example of contributions as product promotion is that of the Brown and Williamson Tobacco Company's sponsorship of the Newport Jazz Festival, renamed the Kool Jazz Festival after one of its brands. Well-known examples of image advertising include Texaco's sponsorship of the Metropolitan Opera broadcasts and AT & T's underwriting of the public affairs program, the *MacNeil-Lehrer News Hour*. 
In (2), we have the standard marginal condition for the output decision while (3) similarly indicates that the firm will increase $G$ up to the point where the marginal revenue of giving equals the marginal cost, in this case its price (by assumption, equal to 1) plus the change in costs brought about by a change in $Q$. Defining $\eta_G$ and $\eta_P$ as the elasticities of demand in giving and in price, respectively, (3) can be arranged to obtain the familiar Dorfman-Steiner rule for advertising adapted to contributions:

$$\frac{G}{S} = \frac{\eta_G}{\eta_P}. \quad (4)$$

Thus, the firm's giving-to-sales ratio ($G/S$) should rise with the elasticity of demand with respect to contribution advertising and fall with the price elasticity of demand.

2. Cost considerations. On the cost side, profit-maximizing managers may use corporate contributions to reduce labor, capital, operating, or regulatory and governmental costs as well as to sow the seeds—and later reap the benefits—of product or technological innovation.

In the labor market, for instance, workers may be willing to work for lower wages in communities that provide better recreational, educational, cultural, and health-related facilities. If the costs to the firms of financing such facilities are more than offset by the wage reductions, profits are increased. At the same time, a firm's charitable support of education can increase the long-run supply of labor (e.g., chemical engineers) and thereby lower the wage the firm must offer. Similar considerations can lower capital and other operating costs. For example, a firm operating in a community with a lower crime rate will pay less for insurance and security because of the reduced risks of theft and vandalism.

In the political arena, corporate contributions may likewise be a useful tactic in an overall lobbying strategy designed to create or maintain a favorable business climate. Within this context, the cultivation of a good public image can help insulate the firm from unfavorable tax or regulatory policies (e.g., stringent environmental regulations), or it can help the firm gain access to favorable laws or regulations, such as a relaxation of zoning restrictions or a tax abatement. The charitable support of basic or applied research likewise can lead to new product or technological developments that lower costs.

To formalize these cost-side effects, the model in equation (1) can be expanded such that cost is a function not only of $Q$ but also a set of community or environmental attributes, $E$. (Below, $E$ is treated within

10. See, e.g., Clotfelter (1985), p. 188.
the context of the labor market, but the discussion can be generalized to capital, operating, and regulatory costs or technological effects.) In this formulation, costs fall as $E$ rises. That is, $C = C[Q(P,G); E]$, and $\partial C/\partial E < 0$.

Assume that employees take into consideration as a condition for work not only the pecuniary compensation that employers offer but also an index of environmental attributes, $E$, that characterize their prospective residential community. Under this assumption, an employee’s potential consumption bundle consists of an array of marketed goods, such as autos, food, clothing, housing, entertainment, and medical care, purchased with pecuniary compensation. It also includes an array of nonmarketed goods—“quasi-fringe benefits”—such as clean air, safety from crime, and access to adequate housing, medical care, and cultural opportunities that can only be “purchased” by residing in the community. In any given community, these nonmarketed goods can be summarized by $E$.

To the extent that an employee puts a positive value on $E$, he or she should be willing to accept lower compensation to work in a community that is characterized by a higher level of $E$. This “labor attraction” dynamic is analogous to Charles Tiebout’s (1956) well-known observation that citizens “vote with their feet,” choosing communities and tax burdens that match their preferences for a level of government goods and services. In this case, workers choose communities that match their preferences for environmental attributes (traded off against pecuniary compensation).

In relating $E$ to $G$, a production function for environmental attributes can be posited as

$$E = E(G,F,V), \quad (5)$$

where $G$ represents the financing of contributions by the individual firm, $F$ represents financing by other firms and private individuals, and $V$ represents financing by taxpayers. In this formulation, $F$ implies the free rider problem while $V$ indicates the possible substitution of private-sector contributions for public-sector social welfare expenditures. While measures of $F$ and $V$ will be incorporated into the empirical model, for simplicity (and without loss of generality) they are treated as exogenous here, and the firm’s objective function can be rewritten:

$$\Pi = PQ(P,G) - C[Q(P,G); E(G,F^0,V^0)] - G. \quad (6)$$

From manipulation of the first-order conditions, cost side effects can be incorporated into this modified Dorfman-Steiner rule:

$$\frac{G}{S} = \frac{\eta_{G}}{\eta_{P}(1 + C_{E}E_{G})}. \quad (7)$$

Since $\partial C/\partial E < 0$ and $\partial E/\partial G > 0$ by assumption, (7) implies that firms
will choose a larger giving-to-sales ratio when cost-side motives are added to demand-side motives (by comparing [4] and [7]).

3. **Tax considerations.** To complete the discussion of profit motives, the effect of a proportional tax rate, \( t \), on the level of \( G \) can be examined. For simplicity, let \( PQ(P,G) \) equal total revenues, \( R \), and maximize:

\[
\Pi = (1 - t)(R - C - G).
\]  

(8)

From the first-order conditions, it can easily be shown that the imposition of a proportional tax will have no effect on the level of giving; that is, under profit maximization, \( \partial G/\partial t = 0 \).

**B. Utility Maximization and Managerial Discretion**

The traditional managerial discretion model (Williamson 1963, 1964) rests on the assumption that inadequate shareholder policing, born of the separation of ownership and control in the modern corporation, provides utility-maximizing managers with the opportunity to shirk their responsibility to maximize the value of the firm. Instead, managers divert “discretionary profits”—that surplus above some minimum profit demanded by shareholders—to finance the consumption of various preferred expenditures: unnecessarily luxurious office suites, excess staff, lavish expense accounts, salaries above those necessary to retain managers, and the like. Such consumption enhances managerial utility by fulfilling the drive for status, power, security, and prestige (Williamson 1964, pp. 29–32). The traditional model further assumes (1) that the extent of managerial shirking rises with the degree of separation of ownership and control and a collateral reduction in the ability of shareholders to overcome organizational obstacles stemming from a diffusion of interests, imperfect information, and transactions costs (Monsen, Chiu, and Cooley 1968; Nyman and Silberstain 1978); and (2) that there are imperfect capital markets.

This section assumption can be relaxed, however, if managerial discretion is viewed within the full generality of the principal-agent problem (Jensen and Meckling 1976; Shavell 1979). In particular, well-informed owners bargaining to Pareto optimality with managers may

---

11. For the statement to be true, it must be that \( 1 + C_E G > 0 \). In general, this will be true if price exceeds cost in the product market, a condition seen by rewriting the first-order conditions \( (P - C_Q)Q = 1 + C_E G \). Thus, the result should hold in all but perfectly competitive markets.

12. It is important to note that this, and all other results regarding the tax rate in this paper, hinge on the assumption of the full deductibility of contributions. This assumption mirrors the present tax code up to a ceiling that virtually all corporations today never reach. In addition, Clotfelter has shown that in a multiperiod framework in which the benefits of contributions are treated as a depreciating asset, tax policy will affect the timing, but not the level, of contributions (1985, pp. 189–90).
allow the managers to trade off preferred expenditure consumption against pecuniary compensation. (Such a possibility is of empirical interest below because expectations about the sign of the relation between executive compensation and contributions will be dependent on the presence or absence of such bargaining.)

With this background, as previous studies have noted, corporate contributions may fit into the managerial discretion framework. In particular, the level of contributions above that necessary to maximize profits can be viewed as a preferred expenditure designed to boost the manager's prestige in the community or, more altruistically, simply as a way to generate the warm glow of the "performance of office for the benefit of society" (Williamson 1964, p. 31). In this characterization, then, the profit motive may be regarded as being nested within the utility motive. That is, some level of giving may be consistent with profit maximization, but we can allow for the possibility that managers may choose to contribute at a level above the profit optimum to enhance their utility.

To formalize this, assume that managers choose a level of giving, $G$, a level of other preferred expenditures, $X$, and output, $Q$, so as to maximize utility, $U$, subject to a shareholder-capital market constraint that nests the profit motive within the utility motive under the assumptions of nonsatiation and the positive marginal utilities of $G$ and $X$. This constraint may be written such that discretionary profits, $\Pi_D$, must equal reported after-tax profits, $\Pi_R$, minus the minimum level of earnings, $\Pi_0$, necessary to prevent either a change in management by shareholders or a corporate takeover by outside buyers in the market for corporate control. Thus, managers maximize

$$U[G,X]; G,X,Q,$$

subject to

$$\Pi_D = \Pi_R - \Pi_0,$$

where

$$\Pi_R = (1 - t)[R(Q,G) - C[Q(P,G); E(G,F^0,V^0)] - G - X].$$

Note that (9) differs in a small but significant way from the classic managerial discretion model (Williamson 1963, 1964; Clotfelter 1985). In that model, $\Pi_D$ is commonly included as an additional argument in


14. In general, we expect that $\Pi_0$ will be related to corporate contributions in the following way. The negative effect of contributions on reported profits must not reduce the value of stockholders' equity by more than the cost of organizing a successful stockholder challenge to management or by more than the cost of organizing a buyout by buyers in the market for corporate control, whichever is smaller.
the managerial utility function (i.e., $U = U(G, X, \Pi_D)$). However, $\Pi_D$ is excluded from (9) on the grounds that it is merely a means to finance preferred expenditure consumption rather than a utility-generating end in itself.\textsuperscript{15} Furthermore, rational behavior coupled with nonsatiation requires that $\Pi_D$ will always be driven to zero; that is, any additional dollar of $\Pi_D$ will always be expended on additional units of $G$ or $X$.

The inclusion versus exclusion of $\Pi_D$ from the utility function leads to quite different implications for tax policy. If $\Pi_D$ is included, an increase in the tax rate generates two effects. First, there is a negative income effect, because after-tax profits and therefore managerial income to finance $G$ and $X$ are reduced. Second, there is a positive substitution effect because the price of $\Pi_D$, which is taxable, changes relative to the other arguments in the utility function, $G$ and $X$, which are tax deductible.\textsuperscript{16}

As will be demonstrated below, in the classic expense preference model, this positive substitution effect offsets a negative income effect and leads to the implication $\partial G/\partial t > 0$; that is, an increase in the tax rate stimulates an increase in preferred expenditure consumption, such as contributions. If, however, $\Pi_D$ is excluded from the utility function, there is only a negative income effect, and $\partial G/\partial t < 0$. Thus, an increase in the tax rate would reduce preferred expenditure contributions.

To illustrate this result and, more generally, the theoretical implications of (9), the following Lagrangean can be solved:

\[
L = U[G, X] + \lambda \left[ \Pi_0 - (1 - t)[R(Q, G) - C[Q(P, G); E(G, F^0, V^0)] - G - X] \right],
\]

(10)

where $\lambda$ is a Lagrangean multiplier. The first-order conditions are

\[
\frac{\partial L}{\partial \lambda} = \Pi_0 - (1 - t)(R - C - G - X) = 0,
\]

(11)

\[
\frac{\partial L}{\partial G} = U_1 - \lambda \left[ (1 - t) \left( \frac{\partial R}{\partial G} - \frac{\partial C}{\partial Q} \frac{\partial Q}{\partial E} + \frac{\partial C}{\partial E} \frac{\partial E}{\partial G} - 1 \right) \right] = 0,
\]

(12)

\[
\frac{\partial L}{\partial X} = U_2 + \lambda (1 - t) = 0,
\]

(13)

\textsuperscript{15} It may be argued that some form of profits does in fact belong in the utility function if managers derive satisfaction or status from them. This may be a valid argument, but it is not the one set forth in defense of $\Pi_D$'s exclusion in the utility function. Nor would the same implications follow, since it is not $\Pi_D$ that is indicated, but some measure of total profits.

\textsuperscript{16} If unspent, $\Pi_D$ is subject to the corporate tax while $G$ and $X$ are fully tax deductible. Thus, a change in the tax rate changes the cost of $\Pi_D$ relative to $G$ and $X$, a point crucial to understanding the tax implications of $\Pi_D$'s placement in the utility function.
and
\[
\frac{\partial L}{\partial Q} = -\lambda (1 - t) \left( \frac{\partial R}{\partial Q} - \frac{\partial C}{\partial Q} \right) = 0, \tag{14}
\]
where \( U_1 \) and \( U_2 \) represent the first partials of the utility function with respect to the first and second arguments, respectively.

Since \( \lambda \) measures the change in utility for a change in the constraint, \( \partial L/\partial \Pi_0 \), and since the constraint is binding, \( \lambda \) is less than 0. At the same time, \( (1 - t) \) is positive by assumption. Hence, (14) can be rewritten as
\[
\frac{\partial R}{\partial Q} = \frac{\partial C}{\partial Q}, \tag{15}
\]
which is equivalent to (2). Accordingly, utility-maximizing managers choose the firm’s output in the same way as profit-maximizing managers. By a similar argument, (12) can be rewritten as
\[
U_1 = \lambda (1 - t) \left( \frac{\partial R}{\partial G} - \frac{\partial C}{\partial Q} \frac{\partial Q}{\partial G} - \frac{\partial C}{\partial E} \frac{\partial E}{\partial G} - 1 \right). \tag{16}
\]
This indicates that utility-maximizing managers will want to choose a level of \( G \) that is higher than strict profit maximization requires. To prove this, recall from (3) that profit-maximizing managers equate the marginal revenue of \( G \) to marginal cost. However, since \( U_1 \) and \( (1 - t) \) are positive and \( \lambda \) is negative, equation (16) implies
\[
\frac{\partial R}{\partial G} < \frac{\partial C}{\partial Q} \frac{\partial Q}{\partial G} + \frac{\partial C}{\partial E} \frac{\partial E}{\partial G} + 1. \tag{17}
\]
Thus, utility-maximizing managers choose \( G \) such that marginal revenue is less than marginal cost. Under diminishing marginal utility of giving (i.e., \( U_{11} < 0 \)), \( G \) must therefore be higher under utility maximization. While this result provides little empirical leverage, it is of interest for its potential social welfare implications; specifically, in the absence of adequate contribution policing and imperfect competition, utility-maximizing managers with a taste for contributions will run their firms inefficiently.

To examine comparative statics, equations (11)–(14) are first totally differentiated:
\[
(1 - t) dG + (1 - t) \ dX = -Z_6 dt - d\Pi_0,
\]
\[
-(1 - t) Z_1 d\lambda + [U_{11} - \lambda Z_2] dG + U_{12} \ dX - \lambda Z_3 dQ = \lambda Z_4 dt,
\]
\[
(1 - t) d\lambda + U_{21} dG + U_{22} \ dX = \lambda dt, \quad \text{and}
\]
\[-\lambda Z_4 dG - \lambda Z_5 \ dQ = 0, \tag{18}
\]
where
\[ Z_1 = \left( \frac{\partial R}{\partial G} - \frac{\partial C}{\partial G} \frac{\partial Q}{\partial G} - \frac{\partial C}{\partial E} \frac{\partial E}{\partial G} - 1 \right) < 0 \]
by (17), or
\[ Z_1 = \frac{G}{S} - \frac{\eta_G}{\eta_P} \left[ 1 + C_E E_G(F^0, V^0) \right] \]
by (6) and (7);
\[ Z_2 = (1 - t) \left[ \frac{\partial^2 R}{\partial G^2} + \frac{\partial^2 R}{\partial G \partial Q} \frac{\partial Q}{\partial G} - \frac{\partial^2 Q}{\partial G^2} \frac{\partial C}{\partial Q} - \frac{\partial^2 C}{\partial Q^2} \left( \frac{\partial Q}{\partial G} \right)^2 \right] \]
\[ Z_3 = (1 - t) \left[ \frac{\partial^2 R}{\partial G \partial Q} - \frac{\partial^2 C}{\partial Q^2} \frac{\partial Q}{\partial G} \right] ; \]
\[ Z_4 = (1 - t) \left[ \frac{\partial^2 R}{\partial Q^2} \frac{\partial Q}{\partial G} + \frac{\partial^2 R}{\partial Q \partial G} - \frac{\partial^2 C}{\partial Q^2} \frac{\partial Q}{\partial G} \right] ; \]
\[ Z_5 = (1 - t) \left[ \frac{\partial^2 R}{\partial Q^2} - \frac{\partial^2 C}{\partial Q^2} \right] ; \]
and
\[ Z_6 = (R - C - G - X). \]

After rendering (18) in matrix form, Cramer’s rule can be applied to solve for \( \partial G/\partial \Pi_0 \) (holding \( t \) constant):
\[
\frac{\partial G}{\partial \Pi_0} \bigg|_{t=\tilde{t}} = -\lambda Z_5 \left[ -(U_{12} + U_{22} Z_1) (1 - t) \right] \frac{1}{|H|}. \tag{19}
\]
This is the “income effect” because it measures the response of giving to a change in the constraint. Intuitively, we would expect this income effect to be negative because, as \( \Pi_0 \) rises, the funds available for preferred expenditure behavior fall, ceteris paribus. On inspection, both the denominator and \(-\lambda Z_5\) are negative by the definition of a negative definite matrix. Thus, for \( \partial G/\partial \Pi_0 \) to be negative, the term in brackets must be negative. In the bracketed term, \( U_{22} \) is negative and \((1 - t)\) is positive by assumption while \( Z_1 \) is negative by (17). Hence, the numerator will be positive if \( U_{12} \) is greater than or equal to zero. The rate of change of \( U_1 \) for a change in \( X \) is \( U_{12} \), and vice versa; it will always be zero in the case of an additive utility function. Likewise, for a multiplicative utility function, it should generally be positive.\(^\text{17}\)

\(^{17}\) On this point, see Williamson (1964, p. 44).
Therefore, the numerator of (19) is generally positive, and the income effect is negative.

Similarly, we can solve for $\frac{\partial G}{\partial t}$ (holding $\Pi_0$ constant):

$$\frac{\partial G}{\partial t} \bigg|_{\Pi_0=\bar{\Pi}_0} = -\lambda Z_5 \left[ - (U_{12} + U_{22} Z_1) (1 - t) Z_6 \right].$$

(20)

By similar reasoning and because $Z_6$ is positive, this derivative is likewise negative. That is, giving falls as the tax rate increases. Substituting (19) into (20) illustrates why this is so; namely, an increase in the tax rate results in a pure negative income effect:

$$\frac{\partial G}{\partial t} \bigg|_{\Pi_0=\bar{\Pi}_0} = Z_6 \left. \frac{\partial G}{\partial \Pi_0} \right|_{t=\bar{t}} < 0.$$  

(21)

The results of (19)–(21) can be contrasted with those obtained from the classic expense preference model. Including $\Pi_D$ in the utility function, managers maximize

$$U[G,X,\Pi_D],$$

subject to

$$\Pi_D = (1 - t)(R - C - G - X) - \Pi_0 \geq 0.$$  

(22)

The classic approach to solving this problem is to treat the constraint as an equality and to regard it as redundant because it takes the same form as the last argument in the utility function.18 The problem then reduces to one of straightforward maximization of the utility function.19 Using a procedure similar to that above then yields the following expressions for $\frac{\partial G}{\partial \Pi_0}$ and $\frac{\partial G}{\partial t}$.20

$$\left. \frac{\partial G}{\partial \Pi_0} \right|_{t=\bar{t}} = \left\{ U_3 Z_5 [U_{13} U_{22} - U_{13} U_{22} (1 - t) + U_{22} U_{33} (1 - t) Z_1 \right. \\
- U_{12} U_{23} - U_{23}^2 (1 - t) Z_1 + U_{12} U_{23} (1 - t)] \}/|J|,$$  

(23)

18. This assumes that second-order conditions are satisfied and that corner solutions are disallowed (Williamson 1963, p. 1036).

19. This approach suggests that perhaps the implications of including $\Pi_D$ in the utility function were not fully recognized. Indeed, the treatment of the constraint as an equality is one of the best arguments for exclusion of $\Pi_D$ in the utility function, because it clearly implies that $\Pi_D$ equals 0, as does the total utility derived from its consumption.

20. In particular, the first-order conditions are totally differentiated, and Cramer’s rule is applied to solve for $\frac{\partial G}{\partial \Pi_0}$ and $\frac{\partial G}{\partial t}$. For the complete derivation and an extended discussion, the interested reader may refer to Williamson (1964, pp. 66–71).
and
\[
\left. \frac{\partial G}{\partial t} \right|_{\Pi_0} = U_3 Z_5 \{ U_{13} U_{22} - U_{13} U_{23}(1 - t) + U_{22} U_{33}(1 - t)Z_1
\]
\[- U_{12} U_{23} - U_{23}(1 - t)Z_1 + U_{12} U_{33}(1 - t)Z_6 \}/|J|
\]
\[+ \{ U_3 Z_5[U_3 U_{22} Z_1 - U_3 U_{23} (1 - t)Z_1 + U_3 U_{12} - U_3 U_{13}(1 - t)] \}/|J|, \tag{24}
\]

where |J| is the relevant determinant.

Under the standard assumptions of the classic model, the income effect represented by (23) is, like its counterpart in (19), negative.\textsuperscript{21}

Collecting terms in Z_6 in turn allows us to rewrite (24) as the sum of this negative income effect and a positive substitution effect where the term to the left of the plus sign is the negative income effect and the term to the right is the positive substitution effect:\textsuperscript{22}

\[
\left. \frac{\partial G}{\partial t} \right|_{\Pi_0} = Z_6 \left. \frac{\partial G}{\partial \Pi_0} \right|_{t = i}
\]
\[+ \{ U_3 Z_5[U_3 U_{22} Z_1 - U_3 U_{23} (1 - t)Z_1 + U_3 U_{12} - U_3 U_{13}(1 - t)] \}/|J|. \tag{25}
\]

In the classic model, this substitution effect is normally assumed to dominate the income effect so that \( \frac{\partial G}{\partial t} > 0 \).

The conflicting results of (21), where \( \frac{\partial G}{\partial t} < 0 \), and (25), where \( \frac{\partial G}{\partial t} > 0 \), have two important empirical implications and one important implication for tax policy. The first empirical implication is that these results provide an empirical means of discriminating between profit maximization and managerial discretion motives. Specifically, if the parameter estimate associated with the federal tax rate in the empirical model below is not significantly different from zero, the hypothesis of managerial discretion can be rejected. The second empirical implication is that a negative sign on the parameter estimate associated with the tax rate would support exclusion of \( \Pi_D \) in the managerial utility function, whereas a positive sign would support the classic expense preference model (i.e., inclusion of \( \Pi_D \)).

Empirical resolution of this issue, in turn, has an important tax policy implication. If the sign is negative/positive, an increase in the tax rate will lead utility-maximizing managers to decrease/increase the corporate contributions of their firms.

\textsuperscript{21} The assumptions include \( U_i > 0, U_i < 0, \) and \( U_{ij} = 0 \) for \( i \neq j \). In addition, both |J| and \( U_3 Z_5 \) are negative by the definition of a negative definite matrix. The most critical assumption here is that the \( U_{ij} = 0 \), which implies that the utility function is additive in its components. For a discussion, see Williamson (1964, pp. 70–71).

\textsuperscript{22} That the substitution effect is positive follows from the same set of assumptions identified in n. 21 above.
II. The Empirical Model

The theoretical conditions established above suggest that the optimal level of contributions, $G^*$, will be functionally related to the set of theoretical variables

$$G^* = f(\eta_G, \eta_P, C_E E_G, F, V, \Pi_0, X, t),$$

where $\eta_G$ and $\eta_P$ reflect demand side advertising motives, $C_E E_G$ measures cost side labor attraction motives, $F$ indicates the free rider problem, $V$ measures the substitutability of private-sector contributions for public-sector welfare expenditure, $\Pi_0$ reflects the shareholder-capital market constraint, $X$ represents other preferred expenditures, and $t$ is the federal tax rate. $G^*$ will be related positively to $\eta_G$ and $C_E E_G$ and negatively to $F$, and $V$ by equations (6) and (7). Likewise, $G^*$ will be related negatively to $\Pi_0$ by (19) and, if expense preference behavior is in evidence, negatively to $t$ by (21) or positively to $t$ by (25).

The following empirical model is designed to test these theoretical relations:

$$G/S = B_0 + B_1\text{ADVER} + B_2\text{PCM} + B_3\text{LINTENSE} + B_4\text{FREERIDE},$$

$$+ B_5\text{GOVT} + B_6\text{MANAGE} + B_7\text{DERATIO}$$

$$+ B_8\text{DIVCHANGE} + B_9\text{MANSAL},$$

and

$$+ B_{10}\text{FEDTXR} + B_{11}\text{TITHE} + \mu,$$

where $\mu$ is an error term, sales, $S$, is a normalizing variable suggested by equation (7), and $G$ is derived from an important new source of previously unanalyzed, firm-specific contributions data, namely, the American Council for the Arts (ACA) Guide to Corporate Giving.23

The ACA is the leading private national organization that serves the arts. The ACA guide has been published to date in three separate volumes—1978, 1981, and 1983. Each volume reports the results of a written survey (with telephone follow-up) sent to a large sample of corporations, with primary focus on the 1,000 largest industrials as listed in the Fortune Double 500 Directory. The sample used herein consists of a pooled cross section of 249 firms drawn from these three volumes of the ACA guide. The firms are all listed on the Compustat data base and represent the sample of firms from the guide for which a complete set of regressors could be obtained. The observations span

23. Other possible normalizing variables for contributions include assets and value added. However, the use of sales in the denominator of the dependent variable is well supported by the theoretical model as well as the empirical results: when the log of contributions was regressed on the log of sales and the other variables in the empirical model, the implied restriction that $B = 1$ for the parameter estimate associated with sales could not be rejected. (The point estimate was 1.08.)
the years 1976–82, with no firm represented in more than one year. Immediately below, the regressors in (27) and their relation to the theoretical variables in (26) are explained while a discussion of two sampling problems associated with the ACA guide data is postponed until the next section.

A. The Demand Side

1. The giving elasticity ($\eta_G$). The firm’s advertising expenses (normalized by sales), ADVER, measures the firm’s propensity to rely on advertising as a marketing tool. As a measure of $\eta_G$, it may be viewed as an instrument for the underlying attributes of the firm’s product(s) that determine this propensity.\textsuperscript{24} These firm-specific attributes (e.g., product heterogeneity and durability) that cause some firms to advertise more than others should also cause the same firms to contribute more than others. Thus, $G/S$ should rise with ADVER.\textsuperscript{25} Implicit in this formulation is that contributions and advertising expenditures may be jointly determined. Hence, we also want to test for the endogeneity of ADVER below.

2. The price elasticity of demand ($\eta_P$). Following Dorfman and Steiner (1954), Schmalensee (1972), and others, the inverse of the price elasticity of demand, $\eta_P$, can be easily shown to equal the firm’s ‘‘price-cost margin,’’ that is, output price minus marginal cost as a proportion of output price:\textsuperscript{26}

$$\frac{1}{\eta_P} = \frac{P - (\partial C/\partial Q)}{P}.$$  

(28)

Thus, $G/S$ should rise with PCM.

However, statistical confirmation of this relation is not sufficient evidence of goodwill advertising motives. The problem is one of multiple inference: a positive relation between giving and the price-cost margin is also consistent with a “rule of thumb” method of determining contribution levels, a method given some weight in survey stud-

\textsuperscript{24} For a discussion of the various attributes that determine a firm’s propensity to advertise, see Caves and Williamson (1985).

\textsuperscript{25} There is a collateral issue here that has arisen in the literature as to whether a positive/negative sign of the parameter estimate associated with the advertising variable may be interpreted as evidence that advertising expenses and contributions are complements/substitutes. While Whitehead argues for this interpretation (1976, p. 65), Maddox correctly points out that the sign can shed no light on the matter (1981, pp. 35–36). The reason is that the concepts of gross substitutability and complementarity have to do with the cross-price elasticity, which the parameter estimate sheds no light on.

\textsuperscript{26} The result, which is also the usual condition for monopoly pricing, may be easily derived from eq. (3). In the empirical model, PCM is represented by the ratio of revenues less costs to revenues, which follows from multiplying the right side of (28) by $Q/Q$. 

ies. Accordingly, we must compare the findings below regarding PCM to those for the other measure of advertising motives (i.e., ADVER).

B. The Cost Side

1. **Labor motives** \((C_E E_G)\). Because many of the benefits of corporate contributions are likely to accrue to labor rather than capital, one important firm attribute bearing on the size of \(\partial C/\partial E\) and the labor attraction motive should be labor intensity. In particular, \(G/S\) should rise as the percentage of a firm’s costs attributable to labor, LINTENSE, rises. However, any given firm’s contributions may be targeted to areas outside the corporate headquarters and plant communities (e.g., nationally). Because giving outside these employee-inhabited communities is likely to have little to do with labor motives, our measure of labor intensity can be refined by multiplying it by the percentage of contributions given in the headquarters and plant communities.

2. **The free rider problem** \((F)\). The possibility that employees from other firms operating in the donor firm’s community may “free ride” off the donor firm’s contribution-financing of community benefits is incorporated in the variable FREERIDE. This variable measures the number of other firms (with more than 20 employees) operating in the firm’s SMSA; the expected sign is negative.

3. **Government spending** \((V)\). The distribution of observations in the contributions data sample across the years 1976–82 provides a test of the substitutability of private sector contributions for federal budget outlays on social welfare needs and, more generally, of the effect of government spending on contributions. During that period, aggregate statistics indicate that corporate contributions changed a great deal in response to the changing role of the federal government. Specifically, contributions rose significantly in 1981 and 1982 as the Reagan administration dramatically cut the federal budget. One possible political interpretation of this rise portrays it merely as a response to the well-publicized “jawboning” of the corporate sector by the Reagan administration. However, from an economic standpoint, it is also true that a decrease in federal spending on welfare needs should increase both the firm’s marginal efficiency of corporate giving as well as the marginal advertising benefits gained from contributions. Thus, from both the cost and demand sides, the observed substitutability of private for public sector dollars is not surprising. To incorporate this factor into

---

27. See, e.g., Maddox (1981, ch. 3).
the model, an indicator variable, GOVT, is set equal to 1 if an observation is from 1981 or 1982, and zero otherwise.\textsuperscript{29} The expected sign is positive.

C. Managerial Discretion

1. The shareholder-capital market constraint ($\Pi_0$). While the best measure of $\Pi_0$ would be the return on equity required to keep shareholders from removing management or to keep raiders from organizing a takeover, as a practical matter, it is not possible to determine this rate directly. Three indirect measures of $\Pi_0$ are, however, proposed.

First, in previous studies, Monsen, Chiu, and Cooley (1968), Chevalier (1969), and Nyman and Silberstan (1978) have examined the extent of separation of ownership and control (and by implication, the size of $\Pi_0$) within the context of a two-regime classificatory system that separates firms into “managerially controlled” and “owner-controlled” on the basis of factors such as stockholder diffusion, composition of the board of directors, and other information pertinent to control.\textsuperscript{30} In developing one measure for $\Pi_0$, this classificatory approach is adopted here: an indicator variable, MANAGE, is set equal to 1 if the firm is managerially controlled, and zero otherwise. This determination is made on the basis of the percent of stock held by the largest investor (with families treated as a unit), the number of managers on the board of directors, and other relevant evidence of control found in 10K reports, proxy statements, and annual reports.\textsuperscript{31} If contributions are, in fact, a discretionary preferred expenditure, the coefficient on MANAGE should be positive.

A second measure of $\Pi_0$ is suggested by the literature on agency costs and optimal capital structure. In particular, it is well known that the existence of tax subsidies on interest payments provides firm managers with an opportunity to increase the value of the firm by increasing leverage.\textsuperscript{32} Because, however, the probability of bankruptcy rises with the degree of leverage (and attendant fixed payment obligations),

\textsuperscript{29} Indicator variables were also tested for individual years and indicated that the grouping for GOVT was appropriate.

\textsuperscript{30} In this regard, it has been observed that the holding of a majority of shares by one individual (or group) is not necessary for effective corporate control. Rather, control can be achieved when the dominant stock interest is well below 50% (Monsen, Chiu, and Cooley 1968, p. 437).

\textsuperscript{31} For a good discussion of the requirements of corporate control, see Herman (1982).

\textsuperscript{32} Modigliani and Miller (1963). In search of an optimal capital structure, subsequent studies have focused on limits to debt financing, such as bankruptcy costs, e.g., Kraus and Litzenberger (1973); credit rationing, e.g., Jaffee (1971); differential personal taxes, e.g., Miller (1977); growth opportunities, e.g., Myers (1977); imperfect or incomplete capital markets, e.g., Robichek and Myers (1966); and the uncertainty of the tax benefit stream, e.g., Brennan and Schwartz (1978).
Donaldson (1963) first argued that managers may, in the interests of job security and stabilization of personal wealth, seek to avoid high leveraging. Jensen and Meckling (1976) subsequently interpreted this suboptimal use of leverage as an agency cost imposed on shareholders by utility-maximizing managers. This line of argument suggests that the firm’s debt-equity ratio, DERATIO, may be used as a second measure of $\Pi_0$. The expected sign is negative; that is, $G/S$ should fall as leverage increases.

A final indirect measure of $\Pi_0$ relates to the firm’s dividend policy. In general, we expect that an increase/decrease in the annual dividend per-share will be associated with a loosening/tightening of the shareholder constraint. Accordingly, $G/S$ should rise with an increase in the dividend from the previous year, DIVCHANGE, and fall with a decrease in the dividend; in other words, the expected sign is positive.

2. **Other preferred expenditures ($X$).** The direct measurement of other preferred expenditures, $X$, is difficult because some fraction of most (if not all) preferred expenditures are legitimate, profit-maximizing activities. Thus, it is difficult to determine the relevant utility-maximizing “residual,” for example, how many square feet of an office, how many staff people, how much of an expense account, and so on, represent non-profit-maximizing behavior. At the same time, managers who indulge in preferred expenditure behavior have no incentive to collect data and/or report such behavior. Indeed, they have every incentive to hide it, both from shareholders and empiricists trying to detect it. Not surprisingly, then, the most common measure of $X$ in the literature is the one preferred expenditure for which excellent data is kept, namely, executive compensation. This measure is adopted here with the caveat that it neither measures the residual salary component indicative of discretionary behavior nor captures the full range of preferred expenditure consumption. Nonetheless, contributions are expected to vary systematically in managerially controlled firms with the remuneration of the firm’s chief executive officer, SALARY, if contributions are a preferred expenditure. To isolate and measure this effect, an interactive term, MANSAL, is created by multiplying MANAGE times SALARY. The expected sign on MANSAL is negative if managers bargain with well-informed owners to trade off

---

33. DERATIO, as it is calculated on the Compustat data base, equals (total assets – total equity + preferred stock)/(total equity – preferred stock)) × 100. In preliminary analyses, the equity-to-sales ratio ($E/S$) was also used interchangeably with DERATIO as a measure of capital structure and performed very similarly to DERATIO. Because of this similarity and because inclusion of $E/S$ created collinearity problems, only the results for DERATIO are reported.

34. Those adopting this measure include Williamson (1963, 1964), Nelson (1970), and Whitehead (1976).
salary for contribution consumption. Otherwise, the expected sign is positive.

3. The tax rate (t). By equations (21) and (25), G/S should either fall or rise, respectively, as the firm’s average federal corporate tax rate, FEDTXR, rises if utility maximization motives are present, and, by equation (8), G/S should be insensitive to FEDTXR if only profit maximization motives exist.

D. Other Factors

In addition to the variables above suggested by the theoretical model, one additional exogenous variable, TITHE, has been included in the empirical model to reflect a unique and potentially powerful positive influence on contribution levels across firms. In particular, in a number of major U.S. cities, strong organized pressures to contribute are exerted on the firm and its managers in the form of “tithing clubs.” Cities that have such clubs include Baltimore, Birmingham, Denver, Duluth, Jacksonville, Kansas City (Missouri), Louisville, Minneapolis, Norfolk, Oakland, Pine Bluff (Arkansas), Phoenix, Rochester, San Francisco, Seattle, Tuscaloosa, and St. Cloud. Table 1 presents the average contributions-to-sales ratio (G/S) for firms in tithing versus nontithing cities as well as by U.S. Census Bureau regions. Note that the average ratio is twice as high for firms in cities with tithing clubs versus cities without tithing clubs.

Firm membership in tithing clubs entails pledging a certain percentage of income to charity (typically, 2%–5%). If a firm fails to join a tithing club in its city, it risks negative publicity and an attendant negative reaction from its customers. At the same time, firm managers risk diminution of status and prestige among their peers and within the broader community. To capture these pressures, an indicator variable TITHE is set equal to one if the firm is headquartered in a city with tithing clubs, and zero otherwise. The expected sign is positive.

E. Summary

Table 2 summarizes the regressors, states the expected parameter estimate signs suggested by the development above, and indicates the data sources (which are explained in more detail in the Appendix).

III. Statistical Considerations and Estimation

A. Sampling Problems

The ACA guide contributions survey data is characterized by two sampling problems that call for the use of more specialized estimation techniques than ordinary least squares (OLS).

First, firms surveyed by the ACA that did not contribute, or contributed very little, generally did not respond to the survey request. This implies a truncated distribution of observations in the data set and, collaterally, both biased and inconsistent estimators if OLS is used. The technique of truncated regression was used to address this problem. We found, however, that this technique yielded virtually identical parameters estimates as OLS. This suggests that truncation is not a problem. Accordingly, we only report OLS estimates below for which heteroscedastic-consistent (White 1980) covariance matrices may be more readily computed.

Second, the ACA survey results are characterized by differential response rates across four distinct strata grouped by size. In particular, of the Fortune 1000 firms (by sales) responding to the survey, the top 200 responded at a 62% rate, firms 201–300 at a 47% rate, firms 301–500 at a 29% rate, and firms 501–1000 at a 19% rate. As a result, the sample employed in the estimation is not random across strata and

38. This conclusion is furthered bolstered by the observation that only a very small percentage of firms in the Fortune 1000 (roughly 5%) do not contribute (Council on Foundations, Corporate Philanthropy [1982], p. 104). For discussion of the relation of OLS to truncation estimators, see Green (1983).
39. American Council for the Arts, Guide to Corporate Giving (1983), 3:563. Response rate clearly falls by size. One major reason, cited by the ACA guide (3:563) is fewer resources to accommodate the survey request in smaller firms. There is nothing in this pattern to suggest, however, that firms within each strata that contribute do not respond in a nonrandom way.

---

**TABLE 1**

Average Giving-to-Sales Ratio by Firms in Tithing Versus Nontithing Cities

<table>
<thead>
<tr>
<th></th>
<th>Giving-to-Sales Ratio (G/S)</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms in cities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tithing</td>
<td>.001258</td>
<td>25</td>
</tr>
<tr>
<td>Nontithing</td>
<td>.000632</td>
<td>224</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>...</td>
<td>249</td>
</tr>
<tr>
<td>Regions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New England</td>
<td>.000777</td>
<td>34</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>.000770</td>
<td>59</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>.000721</td>
<td>17</td>
</tr>
<tr>
<td>East North Central</td>
<td>.000550</td>
<td>78</td>
</tr>
<tr>
<td>East South Central</td>
<td>.000754</td>
<td>4</td>
</tr>
<tr>
<td>West North Central</td>
<td>.001089</td>
<td>20</td>
</tr>
<tr>
<td>West South Central</td>
<td>.000308</td>
<td>14</td>
</tr>
<tr>
<td>Mountain</td>
<td>.000495</td>
<td>1</td>
</tr>
<tr>
<td>Pacific</td>
<td>.000744</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>...</td>
<td>249</td>
</tr>
<tr>
<td>Variables</td>
<td>Variable Definitions</td>
<td>Motives Tested and Expected Signs</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Demand side motives:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADVER ($\eta_G$)</td>
<td>Advertising expenses/sales</td>
<td>Advertising (+)</td>
</tr>
<tr>
<td>PCM ($\eta_p$)</td>
<td>Price-cost margin</td>
<td>Advertising (+)</td>
</tr>
<tr>
<td>Cost side motives:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINTENSE ($C_{EG}$)</td>
<td>(Labor and related costs/cost of goods sold) times (% of contributions directed to headquarters and plant communities)</td>
<td>Labor attraction (+)</td>
</tr>
<tr>
<td>FREERIDE ($F$)</td>
<td>Number of other firms in corporate headquarters' SMSA</td>
<td>Free rider problem (−)</td>
</tr>
<tr>
<td>GOVT ($V$)</td>
<td>An indicator variable equal to 1 if contributions are for 1981 or 1982, and 0 for 1976–80</td>
<td>Substitutability of contributions for government spending</td>
</tr>
<tr>
<td>Managerial discretion:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGE ($I_{I_0}$)</td>
<td>An indicator variable equal to 1 if firm is managerially controlled and 0 otherwise</td>
<td>Managerial discretion (−)</td>
</tr>
<tr>
<td>DERATIO ($I_{I_0}$)</td>
<td>The firm’s debt/equity ratio</td>
<td>Managerial discretion (−)</td>
</tr>
<tr>
<td>DIVCHANGE ($I_{I_0}$)</td>
<td>Dividend in the current year minus dividend in the previous year</td>
<td>Tightness of constraint (+)</td>
</tr>
<tr>
<td>SALARY</td>
<td>Annual compensation of the firm’s chief executive officer (or other highest paid officer)</td>
<td></td>
</tr>
<tr>
<td>MANSAL ($X$)</td>
<td>SALARY $\times$ MANAGE</td>
<td>(−) or, if Pareto bargaining, (−)</td>
</tr>
<tr>
<td>FEDTXR ($t$)</td>
<td>Federal income taxes/pretax income</td>
<td>Profit maximization (insignificant) versus utility maximization (−)</td>
</tr>
<tr>
<td>Other factor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TITHE</td>
<td>An indicator variable equal to 1 if firm operates in a city with a tithing club, and 0 otherwise.</td>
<td>Presence of tithing clubs and associated pressures (+)</td>
</tr>
</tbody>
</table>
TABLE 3 Results of the OLS and WLS Models

<table>
<thead>
<tr>
<th>Regressors</th>
<th>OLS</th>
<th>Restricted OLS</th>
<th>WLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVER</td>
<td>.025802</td>
<td>.025527</td>
<td>.034293</td>
</tr>
<tr>
<td></td>
<td>(2.11)</td>
<td>(2.08)</td>
<td>(2.75)</td>
</tr>
<tr>
<td>PCM</td>
<td>3.48380</td>
<td>3.31368</td>
<td>.484420</td>
</tr>
<tr>
<td></td>
<td>(3.03)</td>
<td>(2.90)</td>
<td>(.40)</td>
</tr>
<tr>
<td>LINTENSE</td>
<td>.009165</td>
<td>.008849</td>
<td>.008963</td>
</tr>
<tr>
<td></td>
<td>(2.84)</td>
<td>(2.75)</td>
<td>(2.51)</td>
</tr>
<tr>
<td>FREERIDE</td>
<td>-.000037</td>
<td>-.000036</td>
<td>-.000031</td>
</tr>
<tr>
<td></td>
<td>(2.29)</td>
<td>(2.28)</td>
<td>(1.52)</td>
</tr>
<tr>
<td>GOVT</td>
<td>.211598</td>
<td>.223757</td>
<td>1.87853</td>
</tr>
<tr>
<td></td>
<td>(1.84)</td>
<td>(2.01)</td>
<td>(1.60)</td>
</tr>
<tr>
<td>DERATIO</td>
<td>-.000927</td>
<td>-.000928</td>
<td>-.001276</td>
</tr>
<tr>
<td></td>
<td>(1.67)</td>
<td>(1.66)</td>
<td>(1.79)</td>
</tr>
<tr>
<td>DIVCHANGE</td>
<td>.374644</td>
<td>.396373</td>
<td>.525538</td>
</tr>
<tr>
<td></td>
<td>(1.76)</td>
<td>(1.83)</td>
<td>(1.72)</td>
</tr>
<tr>
<td>MANAGE</td>
<td>.020972</td>
<td>...</td>
<td>.155938</td>
</tr>
<tr>
<td></td>
<td>(.12)</td>
<td>...</td>
<td>(1.03)</td>
</tr>
<tr>
<td>MANSAL</td>
<td>-.000037</td>
<td>...</td>
<td>-.000523</td>
</tr>
<tr>
<td></td>
<td>(.13)</td>
<td>...</td>
<td>(1.91)</td>
</tr>
<tr>
<td>FEDTXR</td>
<td>-.354570</td>
<td>...</td>
<td>-.620574</td>
</tr>
<tr>
<td></td>
<td>(1.01)</td>
<td>...</td>
<td>(1.68)</td>
</tr>
<tr>
<td>TITHE</td>
<td>.569101</td>
<td>.557086</td>
<td>.642394</td>
</tr>
<tr>
<td></td>
<td>(3.53)</td>
<td>(3.58)</td>
<td>(4.29)</td>
</tr>
<tr>
<td>INTERCEPT</td>
<td>-3.48043</td>
<td>-3.53427</td>
<td>-3.21343</td>
</tr>
<tr>
<td></td>
<td>(16.77)</td>
<td>(19.08)</td>
<td>(12.73)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.223</td>
<td>.229</td>
<td>.164</td>
</tr>
</tbody>
</table>

Note.—Numbers in parentheses are t-statistics.

therefore not representative of the desired population. While there is some controversy in the literature on this point, Klein (1953) has argued that it is necessary to weight stratified nonrandom samples to avoid biased estimates. Following Klein, observations in each strata were weighted by the inverse of the strata’s response rate so that firms in the stratas with the lower response rates received greater weight. As is evident from table 3, such weighting does not affect the qualitative results regarding profit maximization motives but there is an important difference (discussed below) regarding utility maximization motives.

B. The Results

Table 3 reports the results of estimating equation (27) for the unweighted (OLS) and weighted least squares (WLS) samples. The dependent variable is the log of G/S. To further test utility maximiza-

40. For a strong opposing view on the need to weight stratified random samples, see DuMouchel and Duncan (1983).
41. This technique is used under the assumption that, of the firms that contributed, the response was random within strata. See discussion, n. 39 above.
tion motives, the table also presents a restricted version of the unrestricted OLS model in which three managerial discretion variables with insignificant parameter estimates—MANAGE, MANSAL, and FEDTXR—are dropped from the model for the purpose of constructing an F-test. All t-statistics are based on heteroscedastic consistent covariance matrices suggested by White (1980).

The explanatory power of the models, as measured by adjusted $R^2$s, is moderately high for cross-sectional data. These $R^2$s range from .223 and .229 for the unrestricted and restricted OLS models, respectively, to .164 for the unrestricted WLS model. This latter result suggests, not surprisingly, that there is slightly more variability in the contributions behavior (if not in the motives) of the relatively smaller firms, which are given greater weight in the WLS estimations.42

A comparison of parameter estimates across the models likewise indicates considerable stability with respect to both size and significance levels for variables measuring profit maximization motives, but there is less stability among several of the variables measuring utility maximization motives (MANAGE, MANSAL, and FEDTXR). Closer inspection of these estimates suggests that both demand and cost side profit motives influence the corporate contributions decision, but the evidence is less clear cut in support of managerial discretion motives.

With respect to demand side considerations, the parameter estimates associated with PCM are correctly signed and, in the OLS models, statistically significant above the .01 level, suggesting the presence of advertising motives by the modified Dorfman-Steiner rule. This conclusion is further bolstered by the results for ADVER, which yield correctly signed parameter estimates significant above the .05 level across models. At the same time, a Hausman test allows us to weakly reject the hypothesis of the endogeneity of ADVER, a finding consistent with its use in the regression as an instrument for underlying unobserved structural characteristics.43

With respect to cost side considerations, the estimated parameters for LINTENSE are positive and significant at the .02 level or above, providing strong support for the labor market hypothesis. The parameter estimates associated with FREERIDE likewise are correctly signed and significant above the .05 level in the OLS models and weakly significant in the WLS model, suggesting the presence of free rider

42. The similarity of the parameter estimates for the OLS and WLS models suggest similar motives.

43. The Hausman test is based on Hausman (1978). The test involves estimating a separate equation with ADVER as the dependent variable. As suggested by Albion and Farris (1981, p. 130), the regressors included a consumer nondurable indicator variable and measures of market size, regionality of markets, market concentration, and frequency of purchase along with contributions. The prediction of ADVER, ADVERHAT, was used as an additional regressor in eq. (23). The parameter estimate associated with ADVERHAT was very weakly significant (above the .20 level) and suggested only very weak endogeneity.
problems. In a similar pattern, the parameter estimates associated with GOVT are all correctly signed but exhibit slightly larger size and significance levels in the OLS models than in the WLS model. One possible interpretation of these differences for FREERIDE and GOVT in the unweighted versus weighted (inversely by size) samples is that larger firms are both more prone to free rider problems and, being more visible, more likely to take up the slack and substitute increased contributions for falling federal budget dollars.

Turning to utility-maximizing motives, the parameter estimates associated with both DERATIO and DIVCHANGE are correctly signed and consistently significant above the .10 level across models. This suggests, following Donaldson (1963), that more highly levered firms systematically contribute at lower levels, while an increase in the dividend is also likely to indicate an increase in contributions through a loosening of the shareholders constraint. The remaining evidence is, however, less supportive of the managerial discretion theory.

For example, the parameter estimates associated with FEDTXR are both negatively signed, suggesting the presence of utility maximization motives (and exclusion of \( \Pi_D \) in the managerial utility function), but only the estimate in the WLS model is even moderately significant (above the .10 level).

A similar pattern for the OLS versus WLS models prevails for the parameter estimates associated with MANSAL and MANAGE. The parameter estimates associated with MANSAL are both negatively signed, suggesting a managerial bargaining tradeoff between salary and contributions, but only the estimate in the WLS model is above the .10 significance level. Even less robust, for MANAGE, the parameter estimates are correctly signed but insignificant in the OLS model and only very weakly significant in the WLS model.

Given this pattern of evidence for MANAGE, MANSAL, and FEDTXR, it would be imprudent to make any strong claims that utility maximization motives are an important factor in the contribution decision. However, given the apparent differences in the results for these variables in the OLS and WLS models, it is at least possible to conjecture that managerial discretion behavior regarding contributions perhaps may be more prevalent in smaller firms. Such a conjecture—worthy as a topic for future research—is at least indirectly supported by the results of two \( F \)-tests testing the joint significance of MANAGE, MANSAL, and FEDTXR in the OLS and WLS models. On the basis of these tests, we cannot reject the hypothesis (above the .01 level) that the parameter estimates associated with MANAGE, MANSAL, and FEDTXR are jointly zero in the OLS model, but this hypothesis is rejected in the WLS model, at least above the .10 level.

44. This test is described in Pindyck and Rubinfeld (1981, pp. 117–19).
Finally, the positive signs and high significance levels of TITHE's parameter estimates indicate that the presence of tithing club pressures is a strong predictor of contributions.

In summary, the level of charitable contributions appears to rise with ADVER, PCM, LINTENSE, GOVT, DIVCHANGE, and TITHE and fall with FREERIDE and DERATIO, while MANAGE, MANSAL, and FEDTXR appear to weakly influence contributions, but only in the WLS model.

C. Robustness of Results

To assess the robustness of the results above to several common data and estimation problems, the regression model was subjected to several additional tests.

First, the condition index method of Belsey, Kuh, and Welsch (1980) was used to examine the data sample for ill-conditioning, with no significant problems indicated. Second, an examination of the partial-regression leverage plots and studentized residuals indicated a small number of significant outliers in the data sample. The Tukey biweight method of iteratively weighted least squares was used to address this problem. The method systematically downweights the influence of outliers by assigning small weights to observations with large residual value (Mosteller and Tukey 1977, pp. 356–65). The results, not reported below because of space constraints, yielded very similar parameter estimates and significance levels, therefore indicating strong resistance of the results to the influence of outliers.

Finally, Box-Cox estimation of the regression model was employed to test the appropriateness of the logarithmic functional form used above. This procedure (Box and Cox 1964) estimates the appropriate power transformation coefficient, \( \lambda \), for the dependent variable, with \( \lambda = 1 \) implying a linear form and \( \lambda = 0 \) implying a logarithmic form. The Box-Cox results (also not reported for space constraints) once again yielded parameter estimates and significance levels very similar to those above and led to clear rejection of a linear specification for \( G/S \).

D. Comparison of Results to Previous Studies

Before comparing the empirical results above to those of previous studies, it is useful to remind the reader that, with the exception of the Maddox study, previous studies have been restricted to industry data while this study employs firm data. At the same time, this is a cross-sectional study while roughly half of the previously reported results involve time-series data.

45. Clotfelter provides an in-depth review of the previous studies (1985, pp. 193–207). The studies of McElroy and Siegfried (1984, 1985) are not discussed in this section because they are largely derivative of Maddox's doctoral dissertation, with Siegfried advising (Maddox is McElroy's maiden name).
Schwartz, Whitehead, Levy and Shatto, and Maddox all find a positive and significant relation between charitable contributions and advertising, lending support to the conclusion here that contributions are a form of advertising. However, Bennett and Johnson found advertising significant in only two of their 16 reported regressions and only when a specific variable (i.e., unionization) was in the model.

Nelson finds a positive and significant relation between contributions and labor intensity, as does this study, but Whitehead estimates a similar model that yields an insignificant relation. In contrast, Whitehead finds an insignificant relation between contributions and executive compensation motives, but Nelson reports a significant relation.

Clotfelter, Levy and Shatto, Nelson, and Schwartz all find a positive and significant relation between contributions and the tax rate in their time-series analyses. This finding appears to contradict both the theory presented here and the reported results. However, Clotfelter has shown that in a dynamic context (e.g., time series), profit-maximizing firms will change the timing of, as opposed to the total level of, contributions in response to an anticipated change over time in the tax rate, with relative contribution levels higher in periods of higher taxation (e.g., an excess profits tax in wartime). This finding is consistent with the theory presented here, the findings of this cross-sectional study, and the findings of previous time-series studies.

Maddox reports results similar to this study for FREERIDE while every previous study includes some measure of income in their regressions whose parameter estimates are regularly found to be positive and highly significant. These findings on income support the results found for PCM, which is highly correlated with income.

Levy and Shatto as well as Nelson find a positive and significant relation between contributions and total dividends while Whitehead finds a weakly significant positive relation between contributions and the change in dividends.

In summary, this comparison of results yields little evidence that sharply contradicts the hypotheses tested in this study.

IV. Summary and Policy Implications

A. Summary

This paper has examined the motives behind corporate contributions within the context of profit maximization and managerial discretion.

46. See n. 12 above.

47. The hypothesis that contributions may be a form of nonprice competition has been tested and rejected in the literature by Johnson (1966), Whitehead (1976), and Bennett and Johnson (1980). This hypothesis has likewise been rejected in preliminary analyses along with the hypothesis that contributions systematically differ between own-firm and foundation vehicles. Because the variables testing these hypotheses were unrelated to the theoretical model, they were not included in the empirical model above.
The theoretical model has illustrated that the profit motive may be nested within the managerial discretion motive. On the basis of a revised specification of the classic managerial discretion model, the theory also has argued for a reversal of the hitherto postulated positive relation of changes in the federal tax rate to changes in tax deductible preferred expenditures.

An empirical test of the model that is based on an important new source of firm data indicates that profit maximization is an important motive driving contributions. The following hypotheses are supported: (1) corporate contributions represent a form of advertising, (2) contribution-financed environmental attributes represent a quasi-fringe benefit to firm employees, and (3) the free rider problem reduces contribution levels. The substitutability of private sector contributions for public sector welfare expenditures is also supported.

In contrast, the evidence that contributions are a utility-maximizing managerial preferred expenditure is less clear-cut. The empirical analysis supports the hypotheses that contributions are (1) negatively related to the amount of debt versus equity in the firm’s capital structure and (2) positively related to increases in dividends. However, we found no relation in the unweighted sample between contributions, on the one hand, and the federal tax rate, executive compensation, and the degree of managerial control, on the other hand, and only a weak relation when the sample was weighted inversely by size. Finally, the presence of tithing club pressures is a strong predictor of higher firm contributions.

B. Policy Implications and Future Research

From the revenue side of the budget, the empirical result that profit maximization is an important contributions motive supports the legality of contributions as well as the current full deductibility of contributions (up to a seldom encountered ceiling). The evidence would also favor a reform that removed that ceiling and allowed firms to treat contributions as ordinary business expenses.

From the expenditure side, the albeit weaker evidence that private-sector contributions may substitute for public-sector welfare expenditures appears to lend some support to the argument that federal intervention is unnecessary to meet the nation’s welfare needs. But ultimate resolution of this private- versus public-sector debate must hinge on a worthy goal of future research, namely, estimating the elasticity of substitution between contributions and government expenditures. At the same time, future studies may find it worthwhile to study further the effect of firm size (and, collaterally, mergers) on contributions within the context of managerial discretion as well as to examine why tithing clubs that appear to significantly affect contribution levels exist in some cities, such as Minneapolis, and not in others.
Appendix
Data Set Construction

Data on \( G \), the years for GOVT, and information on home and plant giving to construct LINTENSE were taken from the American Council for the Arts Guide to Corporate Giving (1983, vols. 1–3). The variables S, ADVER, PCM, LINTENSE, DERATIO, DIVCHANGE, and FEDTXR were obtained from Standard & Poor’s Compustat data base while information to construct MANAGE, SALARY, and MANSAL was taken from Dun and Bradstreet’s Million Dollar Directory (1980), “10K” reports to the Securities and Exchange Commission, proxy statements, and Compustat.

Values for TITHE and FREERIDE were assigned to each firm in the sample on the basis of location of the firm’s corporate headquarters in a Standard Metropolitan Statistical Area (SMSA) or major city if not in an SMSA. FREERIDE was obtained from the Bureau of the Census 1977 Census of Manufactures. Information to construct TITHE was obtained from Vivian Stark at the Dayton Hudson Corporation.

As a final data comment, two additional steps were taken to conserve degrees of freedom. First, industry data were used to fill in missing observations for LINTENSE. Second, mean values were substituted for missing observations for FEDTXR.

References


48. An indicator variable, LABDUM, was used in preliminary analysis to determine whether the firm data was significantly different from the industry data. It was set equal to 1 if firm data and 0 if industry data. No significant difference was found and LABDUM was dropped from subsequent regressions.

49. On the validity of this procedure, see Pindyck and Rubinfeld (1981, pp. 245–52). Use of means increased robustness of model as would be expected but did not significantly change estimates of the coefficients.


