

TAXES AND CORPORATE GIVING TO CHARITY

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An extensive body of the literature has examined the determinants of individual giving to charity. Indeed, the role of the personal income tax continues to attract considerable attention. In contrast, very few have explored the effects of taxes on corporate giving. This article represents an attempt to fill this void. It employs a large sample of corporate tax returns and finds that taxes are an important consideration in corporate giving.

Keywords: corporate philanthropy; taxes, firm behavior

1. INTRODUCTION

Corporations contribute about \$10 billion annually to charity in the United States. These contributions primarily benefit educational, health, and cultural organizations and are generally tax deductible to the extent they do not exceed 10 percent of a corporation's profits.¹ Because these contributions are deductible from taxable income, they are thought to cost the U.S. Treasury about \$2 billion in foregone corporate income tax revenues.² Despite this perceived tax subsidy to giving, however, few studies have examined the effects of the corporate income tax on contributions, and the little available evidence is inconclusive, in sharp contrast to the extensive body of literature on individual giving.³

AUTHORS' NOTE: We would like to thank James Alm, Gerald Auten, Charles Clotfelter, James Mackie, George Plesko, Laura Powers, Donald Rousslang, and in particular two anonymous referees for helpful comments. The views expressed are those of the authors and do not necessarily reflect those of the Department of the Treasury.

PUBLIC FINANCE REVIEW, Vol. 33 No. 3, May 2005 300-317

DOI: 10.1177/1091142105274541

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Whether taxes influence corporate giving has interesting policy implications. If taxes do not affect charitable contributions, then such gifts can be viewed as an input similar to expenditures on advertising,⁴ and corporations are said to maximize profits. This would suggest that the government should relax some of the present constraints on the deductibility of charitable gifts to minimize potential tax distortions in the choice between giving and other inputs such as advertising, which are expensed. On the other hand, if taxes do influence charitable giving, then shareholders and managers may derive utility, or a “warm glow,” from such gifts. In this case, the current limitation on the deductibility of gifts seems appropriate since giving is simply consumption by a corporation’s owners or managers. However, it is not at all clear that this tax subsidy is the most efficient way to promote this type of consumption or provide assistance to the nonprofit sector.

This article explores the effects of taxes on corporate charitable giving. It introduces a number of innovations when contrasted with the existing literature. First, it represents the first-ever use of administrative micro data in examining the pattern of corporate philanthropy. Second, it is the first attempt to account for the double taxation of corporate profits. And last but not least, it is the first study to account for the pattern of giving by S corporations. These firms are not subject to the corporate income tax, and their inclusion provides a further test of the robustness of our findings on corporate philanthropy.

Regular corporations, legally defined as C corporations, are subject to the corporate income tax. The net-of-tax earnings may be distributed to shareholders as dividends or retained. Dividends are taxed under the personal income tax when received by the shareholders. Similarly, retained earnings that generate capital gains are subject to tax as well. Given dividend and capital gains tax rates, variations in dividend payout rates may impact shareholders differently. In contrast, S corporations are unique in that they are not subject to this double taxation. Profits are taxed as if earned by the shareholders, and charitable contributions are passed on to be deducted on the shareholders’ personal income tax returns. Also unlike C corporations, S corporations are privately held and restricted to a small number of shareholders.

A simple model shows that sensitivity to the tax price of giving implies that corporate giving occurs for reasons other than profit maxi-

mization. Testing this theory on firm-level data suggests that taxes do influence donations. The estimated price elasticity is in the upper range (in absolute value) of those reported in time series studies and at odds with the zero parameter reported, or positive price elasticity implied, in studies using cross-section data. These findings are robust when S corporations are considered, where their presence creates variations in tax rates independent of income. Note, however, that because our analysis incorporates both corporate and personal taxes, our findings are not strictly comparable to those in the existing literature that ignore personal level taxes.

In the next section, we provide a critical review of the literature on corporate giving. In section 3, we present the theoretical conditions under which giving violates the profit maximization model of firm behavior. Next, we proceed with a description of our data. We present the empirical findings in section 4. Section 5 concludes with a summary.

2. LITERATURE REVIEW

Empirical studies of corporate charitable giving have employed aggregate time series as well as survey data to explore the effects of taxes. The former date back to Schwartz (1968), who employed aggregate data on contributions by C corporations. The data spanned the years 1936 through 1961 as published by the Statistics of Income Division (SOI) of the Internal Revenue Service (IRS). More specifically, Schwartz regressed average contributions on a tax price constructed using average tax rates, after-tax income, and other variables. Depending on income definition and model specification, Schwartz reported tax price elasticities ranging from -1.06 to -2.0 and income elasticities from 0.53 to 1.34 .

The Schwartz (1968) study set the research pattern for the next two decades, as summarized in Clotfelter (1985). Nelson (1970), for instance, extended the time-series in Schwartz through 1963 and focused on profitable firms only. Using a synthetic measure of marginal tax rates, Nelson reported price elasticities ranging from -1.03 to -1.18 and income elasticities from 1.05 to 1.43 . In the most recent time-series study, Clotfelter used data from 1936 to 1980 and reported price

elasticities of -0.16 to -0.4 and income elasticities of 0.11 to 0.57 . Using pooled data grouped by industry, Clotfelter also obtained price elasticities ranging from -0.2 to -1.81 and income elasticities from 0.59 to 1.14 ; his preferred price elasticity is -0.4 . Clotfelter, using generalized least squares (GLS) estimates, also highlighted differences in permanent and transitory price elasticities as well as addressed the implication of errors in measuring tax rates and income.

All the above studies face a number of serious shortcomings that stem from using aggregate tax return data as the primary source of information. All are subject to the econometric problem of aggregation bias, where macro estimates are inconsistent with micro estimates (Gupta 1971). Time series studies are unable to account for the upper tail truncation of observed contributions, as the deduction for charitable contributions is limited to a fraction of net income computed before statutory adjustments and the deduction itself. More to the point, deductible contributions are currently limited to 10 percent of income but only to 5 percent before 1981. As such, these studies do not extend beyond the experience of 1980. Furthermore, the published tabulations used by the authors do not provide any information on the dispersion of income for these firms. Hence, it is not possible to compute average marginal or representative tax rates without measurement errors, as the data aggregate corporations in low and high tax brackets as well as fail to distinguish between corporations subject to the regular corporate income tax and those subject to the alternative minimum tax (AMT). As demonstrated in Clotfelter (1985, 219), estimates using different measures of tax rates may diverge significantly.

More recent research has overcome the aggregation problems of aggregate time series data by using firm-level survey data. However, only two studies employing survey data have explored the effects of taxes.⁵ Navarro (1988), in perhaps the most expansive paper on corporate giving, explored the many factors likely to influence corporate philanthropy and attempts to empirically validate them. He employed data from a survey of 249 firms obtained from the American Council for the Arts, spanning the years 1976 through 1982, all reporting positive contributions with no firm represented in more than one year. Using the observed effective tax rate (i.e., book taxes divided by book income and not the marginal tax rate), the least squares estimates in

Navarro suggested that taxes do not stimulate giving. In the latest study, Boatsman and Gupta (1996) employed a panel of 212 donor firms over the period of 1984 to 1988, obtained from the Public Management Institute survey data. Fixed effects estimates suggest a negative correlation between giving and tax rates (not tax price), with an implicit elasticity coefficient of -0.35 for giving with respect to the tax rate evaluated at mean values. In other words, taxes discourage giving.

While the use of firm-level data represents a major improvement over the time series studies, these studies also have other limitations. First, they may suffer from sample selection bias when the data is limited to donors only and the behavior of nondonors is overlooked; taxes may affect the probability of giving as well as its level. Second, they do not account for upper truncation and particularly the changes in the limit on deductibility over time. Finally, a problem common to many of the studies on corporate giving is that some of the explanatory variables, such as after-tax income or the marginal tax rate, are not or cannot be computed with reasonable precision, potentially leading to measurement error biases.

3. MODELING CORPORATE GIVING

3.1. THEORETICAL FRAMEWORK

In modeling the determinants of corporate giving, consider a shareholder whose utility is determined by dividends, or after-tax profits D and corporate charitable gifts G . The shareholder may also view charitable gifts as an input if they generate goodwill and provide name recognition, which may lead to higher sales and profits. More formally, consider a simple one-period model in which the shareholder maximizes utility given by

$$U = U(D, G), \quad (1)$$

where D is corporate profits after corporate and personal level taxes, or after-tax dividends defined as

$$D = [PQ(K, L, G) - rK - wL - G](1 - \tau_c)(1 - \tau_p), \quad (2)$$

where τ_c is the corporate marginal tax rate, τ_p is the personal marginal tax rate, and PQ is total revenue with price P and Q units. The latter is determined by capital K , labor L , and gifts G , if it is an input.

Differentiating (1) with respect to G , the first-order condition yields

$$\partial U / \partial G = PQ_G(1 - \tau_c)(1 - \tau_p)U_D - (1 - \tau_c)(1 - \tau_p)U_D + U_G = 0. \quad (3)$$

If the shareholder does not derive utility from corporate level giving (or if $U_G = 0$), then a corporation will give \$1 to charity up to the point where it is equal to the marginal revenue product, or

$$PQ_G = 1, \quad (4)$$

where profit is maximized. In this case, tax rates do not affect giving and contributions are an input similar to advertising.

If the shareholder derives utility from giving (i.e., if $U_G > 0$), and after rearranging equation (3), the corporation will give up to the point where

$$PQ_G(1 - \tau_c)(1 - \tau_p) + U_G/U_D = (1 - \tau_c)(1 - \tau_p), \quad (5)$$

or to the point where its after-tax marginal revenue product plus the marginal utility of a gift, discounted by the marginal utility of income, equals its net of tax cost or price.

We may conclude from the first-order condition in equation (4) that taxes do not matter in the case of the profit-maximizing firm. Taxes, however, may be an important consideration if contributions have a consumption element to them, as in equation (5). This is largely an empirical question, and we resort to administrative records to examine the influence of taxes.

3.2. DATA

We employ firm-level administrative data to study the effects of taxes on corporate charitable giving. More specifically, we use a sample of corporate income tax returns prepared by the SOI division of the IRS. The sample consists of 77,555 corporation income tax returns for

tax year 1991 (IRS 1991). This is the first year data on S corporation giving became available.

For a variety of reasons, a number of corporations are excluded from the sample. First, we exclude part-year returns because they may contain incomplete information on contributions and income. Second, we exclude firms with zero net income or with losses, because nonprofitable C corporations generally do not report nondeductible contributions given the limitation on the deductibility of contributions to 10 percent of net income. We also exclude firms reporting no sales, as well as mutual funds and real estate investment trusts. The above adjustments reduce our sample to 26,634 corporations.

The resulting sample consists of 15,324 C corporations as well as 11,310 S corporations. The latter, which were restricted to thirty-five shareholders in 1991, account for 40 percent of all corporations and are exempt from corporate-level taxes.⁶ As eluded earlier, an interesting aspect of these S corporations is that, as pass-through entities, they pay taxes at the personal level but do not pay corporate level taxes and thus avoid double taxation. In contrast, C corporations are subject to a corporate level tax, with shareholders subject to personal level taxes on dividend distributions and capital gains. In addition, their deduction for contributions is limited to 10 percent of corporate income.

The following is a brief description of the variables considered in the estimation process and their construction. As defined earlier, the price of corporate giving is $(1 - \tau_c)(1 - \tau_p)$. For each C corporation, we compute the marginal corporate tax rate τ_c by adding \$1,000 to charitable contributions and calculating the change in the tax liability. Because this last dollar marginal tax rate is likely to be endogenous, we also compute the “first dollar” tax rate by setting contributions to zero and computing the tax rate on \$1,000 in assumed contributions for all firms.

The statutory corporate marginal tax rate varies from 15 to 34 percent for most firms. The rate is 15 percent for taxable income below \$50,000, 25 percent for taxable income up to \$75,000, and 34 percent for taxable income over \$75,000. Two additional features of the corporate income tax complicate the determination of the marginal tax rate. First, firms with taxable income between \$100,000 and \$375,000 are subject to 5 percent surtax (i.e., marginal tax rate of 39 percent) to

phase out the benefit of the 15 and 25 percent marginal rates. In the presence of the surtax, the tax rate is no longer an increasing function of income. Second, firms that pay the AMT face a marginal tax rate of 20 percent.

For C corporations, we define the personal tax rate, τ_p , as

$$\tau_p = \alpha\tau_d + (1 - \alpha)\tau_{cg}, \quad (6)$$

where α is the dividend payout rate, and the subscripts d and cg denote dividend and capital gains, respectively. To the extent that we do not have information on shareholders, we use an average marginal tax rate τ_d of .256 for all individual shareholders.⁷ Similarly, we also use a tax rate of .256 for all capital gains, τ_{cg} , but reduce it to .14 to account for the benefit of deferrals following King and Fullerton (1984, 22), assuming a discount rate of .08 and annual realization rate of .10. While these rates do not vary across firms, the shareholder level personal tax rate τ_p varies with the dividend payout rate α . Because the dividend payout rate is likely to be endogenous to giving, α is set equal to .60 based on national data and used to compute a first dollar tax price. The personal level tax rate is further reduced by 30 percent to account for corporate equity held by tax-exempt organizations, such as pension funds and charities.

An additional feature of the data is that firms organized as S corporations face a zero corporate-level tax rate as they are taxed only under the personal income tax. However, the personal tax rate τ_p is not observed as income flows through to the shareholder. To impute such tax rates, we resort to personal income tax data for tax year 1991 and generate average marginal tax rates that vary by the size of S corporation income per shareholder.⁸ Firms with per shareholder profits under \$5,000, for instance, are assigned a tax rate of 21.5 percent, up to 31.2 percent for those with income in excess of \$200,000. Differences in the tax treatment introduce variations in tax rates in the pooled sample of C and S corporations that are independent of income (Feenberg 1987).

Income is defined as net income less corporate and personal income taxes, both computed in the absence of contributions. By adding back contributions to profits, our measure of income will be independ-

TABLE 1: Mean Values for Select Variables (standard deviations in parentheses)

<i>Variable</i>	<i>C Corporations</i>	<i>S Corporations</i>	<i>All</i>
Contributions (\$1,000)	40 (734)	16 (117)	30 (563)
Tax price (first \$)	0.647 (0.083)	0.714 (0.039)	0.675 (0.079)
Tax price (last \$)	0.775 (0.087)	0.714 (0.039)	0.689 (0.076)
After-tax income (\$1,000)	2,590 (34,460)	965 (3,486)	1,902 (26,249)
Assets (\$1,000)	165,957 (3,140,700)	11,124 (32,428)	100,227 (2,375,300)
Advertising expenses (\$1,000)	761 (18,032)	247 (1,786)	542 (14,295)
Foreign ownership (%)	5.6	0.00	3.2
Industry (%)			
Agriculture	4.0	2.9	3.6
Mining	1.1	1.2	1.1
Construction	10.5	10.8	10.6
Utilities	4.5	4.0	4.3
Wholesale trade	17.1	16.0	16.6
Retail trade	16.5	18.2	17.2
Finance	13.4	8.4	11.3
Services	13.2	18.9	15.6
Number of observations	15,324	11,310	26,634
Percentage with contributions	51.2	61.2	55.8

ent of the level of contributions. We also consider assets to control for size as well as consider advertising expenses to control for the firm's reliance on goodwill. In addition, we consider industry classifications to account for unobserved preferences.

Foreign ownership is also considered to control for preferences and other unobserved firm characteristics. We include a dummy variable whose value is one when a firm is at least 50 percent foreign-owned and zero otherwise, which is the only information available on foreign ownership structure.

Table 1 provides summary statistics for select variables for the corporations in our sample. The first column shows that for the 15,324 firms organized as C corporations, the average contribution is \$40,000, with about 51 percent of the companies contributing. The average tax price is .665, or .647 when using the exogenous first dollar tax price measure. The average after-tax income is \$2.6 million, and the average advertising expenditure is about \$0.76 million. About 5.6

percent of the firms are foreign owned. The average asset size is about \$166 million and can be as high as several hundred billion.

The second and third columns of Table 1 provide summary statistics for S and the combined C and S corporations, respectively. The basic statistics reported are distinctly different from those reported in the first column. More S corporations contribute even though they report smaller income and face higher tax prices. On average, these firms contribute smaller amounts, rely less on advertising, and are not foreign owned.

We should note that there are a number of nontax variables that influence giving that we are unable to account for. These include government expenditures that may crowd out private giving, an indicator of whether a firm operates in a city with a “tithing club” where members pledge a certain fraction of their income, and a taste measure for preferred expenditures by management, such as executive compensation, among others as explored in Navarro (1988).

4. RESULTS

4.1. BASIC STATISTICS

Table 2 provides statistics on the pattern of giving by the size of these firms. Beginning with C corporations, we find that the relative frequency of contributors rises with size. About 51 percent of firms with assets under \$50 million contribute compared to 62 percent for those with assets between \$50 million and \$1 billion, and 77 percent for the larger corporations. For each of the three asset classes, we observe a lower tax price for those who contribute than for those who do not. This suggests that giving, in part, may be influenced by the taxes that each firm faces. We also observe higher incomes for those firms that give. This should not be surprising as income is likely to be highly correlated with size of assets. Larger firms not only report greater advertising expenditures but are more likely to advertise as well.

A similar pattern is also observed for S corporations, except that these firms give with a greater frequency despite the absence of a corporate tax. About 60 percent of firms with assets under \$50 million

TABLE 2: Mean Values for Select Variables by Size of Firm

		<i>C Corporations</i>		<i>S Corporations</i>	
<i>Assets (Millions of Dollars)</i>	<i>Item</i>	<i>Give</i>	<i>Do Not Give</i>	<i>Give</i>	<i>Do Not Give</i>
Under 50	Gift	7	0	14	0
	% Giving	0.51	0	0.60	0
	Advertising	95	41	192	45
	% Advertising	0.85	0.64	0.86	0.67
	Price	0.6554	0.6829	0.7127	0.7386
	Income	336	171	820	276
	<i>N</i>	7,160	6,952	6,374	4,334
Over 50, under 1,000	Gift	117	0	172	0
	% Giving	0.62	0	0.90	0
	Advertising	2,046	770	2,441	729
	% Advertising	0.85	0.54	0.86	0.64
	Price	0.6070	0.6390	0.6849	0.6918
	Income	8,071	8,317	7,811	4,849
	<i>N</i>	650	406	544	58
Over 1,000	Gift	4,056	0	—	—
	% Giving	0.77	0	—	—
	Advertising	66,920	28,336	—	—
	% Advertising	0.94	0.33	—	—
	Price	0.6230	0.6424	—	—
	Income	266,777	37,833	—	—
	<i>N</i>	120	36	—	—

NOTE: Gift, advertising, and income amounts are in thousands of dollars.

contribute compared to 90 percent for those with assets between \$50 million and \$1 billion.

When compared to C corporations, S corporations give with greater frequency; 60 percent versus 51 percent for firms with assets below \$50 million, and 90 percent versus 62 percent for the larger firms. Relative to income, S corporations with assets under \$50 million give slightly less than their C counterparts (14/820 versus 7/336). In the case of the larger firms, those with assets ranging from \$50 million to under a billion, however, S corporations seem more generous as gleaned from the relative frequency of giving as the fraction of income donated (172/7,811 versus 117/8,317) despite the higher tax

price. These findings muddy the picture that emerges from studying C corporations alone; it is no longer clear that giving is influenced by taxes. To shed light on the underlying relationship between giving and taxes, we next turn to multivariate analysis.

4.2. MULTIVARIATE ESTIMATES

Charitable contributions are truncated at high and low values. There is a minimum contribution of zero and a maximum contribution limit u equal to 10 percent of income for C corporations. Hence, we model contributions G as

$$G^* = \beta_x + \varepsilon, \quad (7)$$

where G^* is a latent variable and x is a list of explanatory variables described earlier. The observed contributions G , our dependent variable, are

$$G = 0$$

$$G = G^* \text{ if } 0 < G^* < u$$

$$G = u \text{ if } G^* \geq u. \quad (8)$$

In the presence of upper and lower limits on contributions, we employ two-limit Tobit to estimate equation (7).

The first set of estimates in Table 3 is restricted to C corporations, in an attempt to replicate the current literature. Because few observations are near the upper limit of 10 percent of income, we begin with lower-limit standard Tobit estimates. For these firms, the coefficient on after-tax income is positive with an estimate of 1.08 and standard error of 0.03. The implied income elasticity coefficient is 0.65, with an estimated probability of giving of 60 percent evaluated at mean values.⁹ The estimated coefficient on advertising is 0.34, for an implied elasticity of 0.25. This suggests that contributions rise with a firm's reliance on advertising, consistent with the pattern observed in Table 2.¹⁰ The coefficient for the indicator of foreign ownership is negative, suggesting that less is given by foreign-owned firms. The estimated coef-

TABLE 3: Estimates of the Determinants of Corporate Giving (standard errors in parentheses)

Variable	<i>C Corporations</i>			<i>C and S Corporations</i>		
	<i>Tobit</i> <i>L-Limit</i>	<i>Tobit</i> <i>2-Limit</i>	<i>Tobit</i> <i>FIML</i>	<i>Tobit</i> <i>L-Limit</i>	<i>Tobit</i> <i>2-Limit</i>	<i>Tobit</i> <i>FIML</i>
Constant	-13.687 (0.336)	-13.529 (0.356)	-13.859 (0.446)	-13.379 (0.247)	-13.204 (0.255)	-13.564 (0.312)
<i>ln</i> after-tax income	1.044 (0.032)	1.016 (0.034)	1.070 (0.036)	1.089 (0.023)	1.080 (0.023)	1.100 (0.025)
<i>ln</i> advertising expenses	0.347 (0.013)	0.373 (0.014)	0.349 (0.016)	0.331 (0.009)	0.344 (0.010)	0.333 (0.011)
Foreign ownership	-3.248 (0.242)	-3.370 (0.257)	-3.335 (0.240)	-3.338 (0.226)	-3.442 (0.233)	-3.417 (0.209)
<i>ln</i> tax price	-3.455 (0.498)	-3.410 (0.531)	-3.440 (0.514)	-2.820 (0.443)	-2.617 (0.458)	-3.008 (0.449)
σ	5.821 (0.052)	6.174 (0.058)	5.595 (0.111)	5.513 (0.036)	5.684 (0.038)	5.393 (0.071)
ψ^a	— —	— —	51.460 (2.1473)	— —	— —	49.537 (1.720)
$\Phi = \text{Prob}(\text{nonlimit})$	0.602	0.483	0.604	0.663	0.577	0.664
Price elasticity	-2.080	-1.646	-2.076	-1.869	-1.510	-1.997
Income elasticity	0.629	0.491	0.646	0.722	0.623	0.730
Log-likelihood	-30,366	-29,685	28,160	-55,060	-54,432	54,395
Observations	15,324	15,324	15,324	26,634	26,634	26,634

NOTE: The dependent variable is defined as the log of charitable contributions. Coefficients for industry classifications and S corporation dummy are not reported. FIML = full information maximum likelihood.

a. Tax price is endogenous to giving.

ficient is -3.2, which indicates that on average, foreign-owned corporations give 55 percent less than domestic firms.

The coefficient of the first dollar tax price is estimated at -3.5 with standard error of 0.5. This implies an elasticity of -1.8 for giving with respect to the tax price, again evaluated at mean values.¹¹ This estimate, in absolute value, is in the upper range of elasticities reported in time series studies and is in variance with the evidence of zero or positive effect of taxes on giving reported in cross-sectional data.¹²

Because of the large divergence in size of assets reported in Tables 1 and 2, estimates may be heteroskedastic, at least with respect to size, and very well biased. However, there is little evidence of heteroskedasticity with respect to assets, and the estimates are little affected

when corrected for it.¹³ In contrast, correcting for the upper truncation of the dependent variable, by reducing the probability of nonlimit observations, reduces the estimated price and income elasticities by some 20 percent in absolute value.¹⁴ As demonstrated in the second column of Table 3, while the estimated coefficients remain unaffected, the estimate of the probability of giving Φ declines from .6 to .48.

The first dollar tax price is exogenous to the level of giving. However, the last dollar tax price is arguably the theoretically correct but potentially endogenous measure. The first column of Table 3 is reestimated using full information maximum likelihood (FIML), where the level of giving and the tax price are estimated simultaneously.¹⁵ While the estimates reported in the third column suggest that the tax price is endogenous to giving, the reported coefficients are almost identical to those reported in the first column. Combined, these estimates continue to demonstrate the sensitivity of giving to taxes.

The above estimates have significant implications for modeling the effects of changes in the tax treatment of corporate giving. If the deductibility of corporate charitable contributions is repealed, one would expect to observe a reduction of gifts by some 50 percent for C corporations, all else equal (i.e., only the tax price matters). On the other hand, if the corporate tax were repealed, corporate giving would fall by about one-third (i.e., both the tax price and income matter). In both cases, the tax price rises to $(1 - \tau_p)$, and only personal taxes matter.

One interesting feature of our data is that it includes S corporations, which, as gleaned from Table 2, seem to be more generous despite the absence of corporate level taxes. Accounting for S corporations may offer an opportunity to further validate the importance of taxes in determining corporate charitable giving behavior. As such, the estimates reported in the first through third columns of Table 3 are replicated for the combined sample of C and S corporations.

Beginning with the fourth column of Table 3, the estimated price coefficient is -2.8 with a standard error of 0.4 , for an implied elasticity of about -1.9 , slightly smaller in absolute value from the estimate of -2.1 for the sample of C corporations.¹⁶ The very same pattern is observed in columns 5 and 6. These results are generally similar to those reported for C corporations. The sign and significance of these coeffi-

cients are again inconsistent with the profit-maximization model. If giving is another input and profit maximization is the objective, then the estimated coefficients should not be significantly different from zero.¹⁷

The above findings are robust to a number of alternative subsamples of the data. Limiting the combined sample to corporations with assets under \$890 million, the maximum size of an S corporation in the sample, has virtually no effect on the above results. Similarly, the findings are invariant to excluding firms with assets in excess of \$1.1 billion, where mean C and S corporate income is equalized. On the other hand, the estimated coefficient on price in the pooled sample becomes insignificant when the sample is restricted to firms with income under \$500,000.

5. CONCLUSIONS

This article studies the determinants of corporate charitable giving with an emphasis on the effect of the corporate income tax. We employ a sample of about twenty-six thousand firms composed of C and S corporations. Our data help us avoid the aggregation bias and measurement problems common to time series studies as well as the selection bias and survey nonresponses plaguing studies that rely on survey data.

The results show that corporate philanthropy declines with the tax price and rises with income and advertising. They also show that foreign-owned firms give the least. The findings that corporate charitable contributions are price-sensitive suggest that the profit-maximization model does not fully explain the pattern of corporate giving, at least in the short run.

Future research should expand our study by focusing on a number of issues. These include differences between transitory and permanent effects as well as the contribution of gifts to firm performance over time.¹⁸ Longitudinal data, particularly those that straddle major tax reforms, may help address these issues.

Tax avoidance should also be explored in future research. Charitable contributions are reported on tax returns but not to the shareholder-

ers on the corporation's annual report. Recent evidence points to a considerable discrepancy between the value claimed by donors of patents and intellectual property and the benefits received by the recipient charities (Riordan 2003). Along with the lack of transparency, this raises the question of whether the reported contributions reflect corporate generosity or are simply part of a tax-sheltering strategy.¹⁹

NOTES

1. Corporations are prohibited from making deductible contributions to religious institutions. See American Association of Fund Raising Counsel (AARFC) Trust for Philanthropy (1999, 31); and Auten, Cilke, and Randolph (1992, 288), for historic trends in corporate giving.

2. See U.S. Office of Management and Budget (2001, 68-69).

3. See Auten et al. (2002), Randolph (1995), Steinberg (1990), and Clotfelter (1985) for a review of this literature. For a related literature on entrepreneurial giving, see Barbour, Bruce, and Holtz-Eakin (2001).

4. This may take the form of expenditures aimed at increasing sales, recruiting employees, or improving relations with regulators and civic groups.

5. A number of studies focus on nontax factors in giving. McElroy and Siegfried (1984), for instance, explored the motives for giving. In another example, Atkinson and Galaskiewicz (1988) focused on the effect of the ownership structure on giving.

6. See Carroll and Joulfaian (1997) and Mackie-Mason and Gordon (1991). Note that the organizational choice itself may be influenced by differences in corporate and personal tax rates.

7. These are dollar weighted measures of marginal tax rates computed using 1991 individual income tax data. We are grateful to Jim Cilke for computations related to personal taxes.

8. More specifically, the following rate schedule is applied to per shareholder S corporate income Y (\$1,000s): $Y < 5$, $t = .215$; $Y \geq 5$, $t = .219$; $Y \geq 10$, $t = .230$; $Y \geq 20$, $t = .250$; $Y \geq 30$, $t = .283$; $Y \geq 50$, $t = .295$; $Y \geq 75$, $t = .311$; $Y \geq 100$, $t = .310$; $Y \geq 200$, $t = .312$.

9. The elasticity is computed as $\Phi(z)\beta$.

10. A qualitatively similar result is found when advertising expenditures are replaced with its share of sales.

11. Using Heckit, the estimated coefficients on price and income become -0.79 (standard error = 0.1) and 0.11 (standard error = 0.01) in the Probit or criterion equation, and -1.22 (standard error = 0.43) and 0.67 (standard error = 0.05) in the level equation with λ of 3.26 (standard error = 0.62).

12. The size of firms, as measured by their assets, is not controlled for in these estimates. Adding \ln Size to the regressors has the effect of lowering the estimated coefficient on income and advertising by one-third, with little effect on the remaining variables.

13. When correcting for heteroskedasticity with respect to the log of size, the log-likelihood (LL) is $-30,365$ compared to an LL of $-30,326$ reported in the bottom of the first column of Table 3.

14. The elasticity is computed as $(\Phi_u - \Phi_l)\beta$.

15. Using a maximum likelihood procedure following Blundell and Smith (1986), we regress the last dollar tax price on the first dollar tax price and the remaining regressors in Table 3. The

Tobit model is reestimated with the regressors augmented by the residual from the tax price equation. The results show that the estimated coefficient for the residual is significantly different from zero.

16. When correcting for heteroskedasticity with respect to the log of size, the LL is $-55,060$ compared to an LL of $-55,994$ reported in the bottom of the fourth column of Table 3. The estimated coefficients on price and income become -3.12 and 1.11 , respectively.

17. In an alternative experiment of the first and fourth columns, we regress advertising expenditures on the regressors in Table 3. For C corporations, the estimated coefficient on the tax price is -0.75 (standard error = 0.42); and for the combined sample of C and S corporations, -0.45 (standard error = 0.38), which are not significantly different from zero as predicted by the profit maximization model.

18. Judging from the findings in Auten et al. (2002) and Randolph (1995), who examined individual giving, one would expect the transitory effects to be considerably different from the permanent effect.

19. Recently enacted legislation, H.R. 4520, the American Jobs Creation Act of 2004, aims to curtail this type of abuse.

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