

# The Effects of Firm Size and Industry on Corporate Giving

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**ABSTRACT.** Recent downward trends in corporate giving have renewed interest in the factors that shape corporate philanthropy. This paper examines the relationships between charitable contributions, firm size and industry. Improvements over previous studies include an IRS data base that covers a much broader range of firm sizes and industries as compared to previous studies and estimation using an instrumental variable technique that explicitly addresses potential simultaneity between charitable contributions and profitability. Important findings provide evidence of a cubic relationship between charitable giving and firm size and evidence of strong industry effects. The plus-minus-plus regression coefficient sign pattern for the cubic firm size model suggests that small and large firms give more relative to total receipts with lower giving ratios among medium size firms. One interpretation for this finding is that small firms are close to the communities they serve while high visibility creates a need for large firm philanthropy. Strong industry effects provide evidence of inter-industry differences in giving culture and/or different public relations requirements across industries.

**KEY WORDS:** charitable contributions, corporate philanthropy, firm size, industry effects, social responsibility

## Introduction

Corporate giving as a percentage of profit declined over the past 15 years despite recent research suggesting that firms have financial and strategic motives for socially responsible behavior. Porter and Kramer (2002) reported that corporate giving by U.S. companies declined 1.5% in real terms over the past 15 years, a 50% decline in giving as a percent of profit. Interestingly, this reduction in corporate giving coincides with evidence suggesting that a strong corporate social responsibility commitment attracts and retains customers. A survey by Maignan et al. (1999) found that 88% of consumers described themselves as more likely to buy from a socially responsible corporation, while 76% indicated a willingness to switch brands to support socially responsible firms.

Changes in corporate philanthropy may reflect consumer preferences for broader community involvement by business in contrast to the cash donation dominated approach of the past. Hess et al. (2002) argued that long-term community involvement produces a more positive corporate image as compared to cash charitable contributions. In a survey of 1000 consumers, Hess et al. found that 43% of respondents were most impressed by companies donating services, 37% most impressed by volunteering employee time, while only 12% were most impressed by cash donations. Like community involvement, cause-related marketing provides corporations with a more visible vehicle for matching social responsibility programs with the values of important publics and target market segments. Porter

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and Kramer (2002) reported that high-profile, cause-related corporate giving increased from \$125 million in 1990 to \$828 million in 2002, a period of time that was characterized by a decline in overall corporate charity. Emphasizing the high visibility of cause-related charity, Porter and Kramer (2002) noted that Philip Morris spent \$100 million in 1999 publicizing their \$75 million in charitable contributions.

While corporate philanthropy as a subset of corporate social responsibility offers firms potential strategic and financial rewards, prior literature reports differences in philanthropy levels based on market and firm (institutional) attributes. Johnson's (1966) pioneering research on corporate giving as related to firm size and market structure found that neither highly competitive nor highly monopolistic industries provide environments conducive to high levels of giving. Johnson reasoned that firms in competitive industries could not afford charity unless every firm in the industry chose to give, whereas firms in highly monopolized industries had no incentive to give. According to Johnson, firms in the middle, facing the most rivalry, had the greatest incentive to engage in philanthropy. Johnson concluded that firms in these high rivalry industries would view charitable contributions as a mechanism for differentiating their market position, gaining strategic advantage over other firms in the industry. Descriptive empirical results provide support for Johnson's hypotheses regarding inter-industry patterns of corporate giving.

Later research further established firm size as an important factor in determining philanthropy (Burlingame and Frishkoff, 1996), but left questions as to the exact nature of the relationship. For example, several studies including Atkinson and Galaskiewicz (1988), Boatsman and Gupta (1996) and Buckholtz (1999) concluded that large firms give more to charity. Useem (1988) found that firm size is the single most important determinant of corporate giving and that large firms appear to contribute relatively more money to charity regardless of profits. Research examining the relationship between firm size and giving for firms at the low end of the firm size distribution is less conclusive. Thompson et al. (1993) observed that giving by small businesses is positively related to the number of employees. Alternatively, Kedia and Kuntz (1981) found a negative relationship between bank asset size and contributions as a percent of net income. Studying small Canadian firms, Martin

(1985) concluded that a smaller percentage of small firms give, but that the small firms that do practice charity give a larger proportion of pre-tax income as compared to larger firms.

The slack resource view of social responsibility, prominent in the works of McGuire et al. (1988), Ulmann (1985), and Roberts (1992), argues that firms engage in socially responsible behavior such as corporate giving when slack resources permit. Extending the slack resources hypothesis to charitable giving, McElroy and Siegfried (1985) concluded that the elasticity of contributions to net income is approximately equal to one, lending support for the hypothesis that profitability creates slack resources that can be used to support charitable giving. Buckholtz et al. (1999) observed that the influence of profitability on charitable giving may be separate from firm size because large firms are not necessarily profitable.

While the logic of slack resource theory and the implied positive relationship between corporate giving and profitability is rather compelling, empirical results have been inconclusive. Some researchers have argued that slack resources are more closely related to prior financial performance than to current profitability. This view is supported by the works of McGuire et al. (1988) and Waddock and Graves (1997), who found strong relationships between charitable giving and prior financial performance. Seifert et al. (2003), p. 208 reported a weak positive relationship between available cash and corporate giving, suggesting an "ebb and flow according to the cash cushion a firm has at any point in time."

The corporate responsibility as business strategy literature implies that firms engage in socially responsible behavior to enhance their image and ultimately the bottom line. This view, presented by Hess et al. (2002), suggests the direction of the relationship between profits and philanthropy as one that runs from corporate giving to profitability as firms engage in philanthropy to enhance customer relations and build a positive corporate image. Hess et al. (2002) go so far as to argue that a positive reputation is essential to the long-term success of the firm. While Hess, Rogovsky and Dunfee present a compelling argument for the importance of philanthropy on profits, other studies report that corporate giving exerts no effect on corporate profitability. Additional evidence provided by Seifert et al. (2003) and Griffin and Mahon (1997) fails to support a relationship

between corporate giving and profitability. Griffin and Mahon (1997), summarizing previous findings, noted correlations ranging from positive to null to negative in describing the relationship between firms' financial performance and philanthropy.

Several authors point to industry differences as an important determinant of corporate giving. For example, Useem (1988) argued that firms from industries with high levels of public contact such as retailing, insurance or banking typically give more than firms from low contact industries such as mining or primary metals. Useem's argument suggests that there are differences across industries in the perceived need for firms to pursue socially responsible outcomes. Vidaver-Cohen and Altman (2003) emphasized the need for corporate citizenship to meet implied corporate responsibility to various communities, including the firm's industry. Finally, Seifert et al. (2003), in their study of the relationship between corporate giving, cash flow, and profitability, include industry among the factors that must be controlled.

The philanthropy as business strategy view provides a complement to slack resource theory in explaining corporate giving. However, these complementary explanations for profits and philanthropy suggest the potential for simultaneity in the relationship. Slack resource theory suggests causality running from profitability to charitable giving, while corporate strategy suggests philanthropy as a causal factor explaining profitability. Previous studies have generally ignored the potential for simultaneity. The methodology used for this paper employs an instrumental variable technique to deal with the simultaneity. An instrumental variable for return on assets is obtained by regressing ROA on variables that would not be expected to directly influence charitable giving. This instrument for return on assets is then included as a right hand side variable in the charitable contributions model, our main equation of interest. Greene (2000) suggests instrumental variables as one technique for dealing with an endogenous independent variable. Greene demonstrates that the instrumental variable eliminates correlation between the regressor and the disturbance term, producing an unbiased and consistent estimator.

The works cited above represent important contributions to our understanding of the determinants of corporate philanthropy. However, limitations in

the data and empirical techniques leave several gaps in the contribution of previous research. Data problems in previous studies result from a limited range of firm sizes and industries. The failure to properly account for potential simultaneity in the profits-philanthropy relationship leads to the main deficiency of the empirical methods. This research seeks to develop and test a model that examines the factors that determine inter-firm differences in corporate giving. The paper adds to previous literature by incorporating data that include a much broader range of firm sizes as well as industry aggregations that come closer to economists' concept of a market. We employ instrumental variable techniques to address the issue of simultaneity in the relationship between profits and charitable contributions.

### **Methodology and data**

Historically, the data for studies regarding corporate social responsibility, including corporate charity, relied on surveys of corporate executives. While these studies provided useful insights, there is frequently incongruence between executive claims and actual corporate giving. Fry et al. (1982) suggest that when using executive survey data, it is often impossible to distinguish between what the firm actually does and what the executive claims. For this reason, Fry et al. argued that Internal Revenue Service data provide more reliable estimates of corporate giving as compared to survey data. Using IRS Statistics of Income data for 36 industry groups covering the years 1946-1973, Fry et al. (1982) found that charitable giving levels were related to advertising, suggesting that firms may view charity as just another component of their overall advertising and public relations strategy. Moreover, Fry et al.'s finding that firms with more public contact spent relatively more on charity suggests that charitable contributions are driven, at least in part, by the desire to create a favorable image with important publics.

While the study by Fry et al. (1982) represents a pioneering investigation regarding the determinants of corporate giving levels, their use of very broad data limits their findings. Specifically, the IRS data source used by Fry et al. did not permit detailed analysis regarding the importance of firm size in determining

relative giving levels. Moreover, the industry groupings contained in their data are too aggregated to permit a thorough investigation of the role that industry plays in determining corporate giving.

All data used for this study were gathered from the *IRS Corporation Sourcebook for the Statistics of Income* for the year 1999. The sourcebook data source offers several advantages as compared to the more aggregated IRS data used by Fry et al. The sourcebook data contain income statement items for 12 asset size classes ranging from firms with zero assets up to an open ended upper size class consisting of firms with \$250 million or more in total assets. A table with the ranges for each of the asset size classes and a table with NAICS industries and the number of observations per industry appear in the Appendix A. In the interest of space, we list only the NAICS industry code. Industry definitions are available upon request or online from the IRS website. We delete the zero asset size class in order to avoid the difficulties associated with computing rates of return for firms with zero assets, leaving a data set with 11 asset size classes. The data set includes 83 IRS industries. These industries cover manufacturing, retailing and credit intermediation thus providing a very broad cross section of U.S. industry. Some size classes were empty cells as some size classes were not represented in all industries. The completed data set contains 719 observations.

Since the data is disaggregated by firm size class, our sample is better suited for modeling the effects of firm size on relative corporate giving. Moreover, the 11 asset size classes allow analysis of corporate giving across the full range of firm sizes. Previous studies (e.g. Seifert et al., 2003) have been limited to large firms. As stated above, the firm size classes in our data range from the very smallest to very largest firms in the American economy. The industry level of aggregation is the NAIC six digit industry, a level of aggregation that corresponds roughly to the four-digit SIC found in the Census Bureau data prior to 1997. While six-digit NAIC industries do not correspond in every case to the economists' definition of a market, most NAIC industries are sufficiently disaggregated to provide reasonable approximations of a competitive environment. Moreover, the IRS Sourcebook industries are considerably less aggregated than the broad industry groupings used by Fry et al.

The IRS Sourcebook data set is widely familiar to researchers in economics and business and has been used in the previous work of Stigler (1963), Demsetz (1973), Caves and Pugel (1980), and Porter (1979). Each of these authors used firm size class averages to test hypotheses regarding individual firm behavior. Porter's 1979 paper remains a seminal contribution to the management literature; Stigler and Demsetz' works are regarded as major contributions to the field of industrial economics.

The basic model expresses relative charitable contributions, measured charitable contributions divided by total receipts, as a function of the various firm variables and market environment variables. Equation (1) contains the basic specification:

$$\text{GIFTRATIO}_{ij} = \alpha_0 + \alpha_1 \text{ADIN}_{ij} + \alpha_2 \text{FSIZE}_{ij} + \alpha_3 \text{ROA}_{ij} + \sum_{j=1}^{M-1} \alpha_{4+j} \text{IND}_j + \mu$$

Variable definitions for the variables contained in equation (1) are given below:

Dependent Variable:

- A. *Contributions Relative to Total Receipts:* (GIFTRATIO<sub>ij</sub>) measured as charitable contributions divided by total receipts for the *i*th size class of the *j*th industry.

Strategic Effects:

- A. *Advertising Intensity:* (ADIN<sub>ij</sub>) measured as advertising expenditure for the *i*th size class of the *j*th industry, divided by total receipts for the *i*th size class of the *j*th industry.
- B. *Firm Size:* (FSIZE<sub>ij</sub>) measured as the average assets for each firm in the *i*th size class of the *j*th industry. FSIZE<sub>ij</sub> is calculated as total assets in each size class divided by the number of firms (number of returns) in each size class.
- C. *Return On Assets:* (ROA<sub>ij</sub>) measured as the sum of net income and interest paid divided by total assets for the *i*th size class of the *j*th industry.

Industry Environment

- A. *Industry Fixed Effects:* (IND<sub>j</sub>) measured by a set of  $M-1$  industry dummy variables with

$M$  being the number of industries included in the sample. The variable takes on a value of 1 if the observation falls within that industry and zero otherwise.

The independent variables included in equation (1) are based upon the previous works cited above. Advertising intensity is included based upon the work of Fry et al. (1982) who found a relationship between advertising and charitable giving. Fry et al. argued that advertising and philanthropy are essentially complementary inputs in the firm's efforts to promote goodwill. Firm size is included based upon the previous work of Buckholtz et al. (1999), and Seifert et al. (2003), that establishes firm size as a potential determinant of charitable giving. Moreover, Useem (1988) found that firm size is the most important institutional (firm) factor in determining corporate giving.

*H1:* Large firms give more in philanthropic contributions relative to total receipts than do smaller firms.

We estimate the firm size variable in both linear and cubic form.<sup>1</sup> The cubic firm size relationship is estimated recognizing the potential for a plus-minus-plus sign pattern on the linear, squared and cubed firm size terms. A plus-minus-plus sign pattern would indicate giving levels for small and large firms elevated relative to those of medium sized firms. This function allows for two bends in the relationship between firm size and charitable giving. A cubic specification allows charitable giving to rise with firm size up to an initial threshold, fall with firm size for medium sized firms and rise again at the upper end of the firm size distribution. Small firms may give more due to closer attachments to the community in which they operate. Thompson et al. (1993) argued that small firms donate to have an impact on their immediate neighborhood or to attain visibility within the community. Large firms, on the other hand, may give more because large size creates increased need for a positive public image. Saia et al. (2003) observed that a firm's business exposure is affected by the size of the customer base and geographic dispersion of the firm's operations, factors that increase the scrutiny of large firms.

Medium sized firms, on the other hand, are likely to be neither particularly close to their community nor particularly visible.

*H2:* A cubic function best captures the non-linear relationship between firm size and philanthropic contributions relative to total receipts.

Return on assets is included in the model based upon the slack resource theory presented by McGuire et al. (1988), Ulmann (1985), Roberts (1992), and Waddock and Graves (1997).

*H3:* A positive relationship exists between philanthropic contributions relative to total receipts and profit as measured by ROA suggesting that slack resources contribute to a firm's philanthropic contributions.

The arguments presented above dictate a methodology that addresses the simultaneous relationship between return on assets and the ratio of charitable contributions to sales. Profitability appears on the right hand side of the charitable contributions model, but the strategy literature suggests that profitability may also be a function of charitable giving. This results in a correlation between one of the regressors and the disturbance term; the OLS estimators are biased and inconsistent. Sufficient data to identify separate equations for profitability and charitable giving are not available. However, instrumental variables provide a solution for the endogeneity of profitability.

The instrumental variable technique requires regressing the endogenous variable on one or more exogenous variables to purge correlation with the disturbance term. We employ an instrumental variable constructed from the regression of return on assets on three variables that do not exert separate influences on charitable giving levels: market concentration, market share and capital intensity. Market concentration, market share and capital intensity are potential sources of market power. The structure performance literature cited in the works of Bain (1956), Hall and Weiss (1967), Shepherd (1972), Scherer and Ross (1990) and others suggests a potential for market power to increase profit. This

increased profit provides an opportunity for slack resources that previous authors establish as a potential foundation for increased corporate giving. In summary, any influence of market concentration, market share or capital intensity on corporate giving would come via their impact on profitability.

The predicted value from the regression of return on assets on market concentration, market share and capital intensity is then included as a regressor in equation (1). Advertising intensity was included in the equation for return on assets based on the findings of Fry et al. (1982) who found evidence that advertising and charitable contributions are complementary inputs in developing the firm's goodwill.

*H4:* A positive relationship exists between the ratio of charitable giving to receipts and advertising intensity.

Fisher and McGowan (1983) and Benston (1985) offer harsh criticism of rate of return measures claiming that they are subject to error and bias, but neither Fisher and McGowan nor Benston offer solutions or alternatives for measuring profitability. Mueller (1990) observed that while most of Fisher and McGowan's (1983) criticism focuses on the tendency for accounting return to deviate from the internal rate of return for an individual investment project, accounting return is typically computed for the entire firm. None of the prior work criticizing the use of rate of accounting profit measures has attempted to compare accounting rates of return to internal rates of return at the company or corporate level. Moreover, Martin (1993) argued that abandoning the use of rate of return measures would ultimately imply an end to most empirical work in business and economics. We agree with Martin's contention that the costs of failing to use accounting based rate of return measures are thus potentially greater than the use of measures that may be slightly flawed.

Industry fixed effects are included in the model to capture inter-industry differences in giving ratios. Differences in public exposure and differences in sectoral concerns may create inter-industry differences in corporate giving policies. Williams and Barrett (2000) argued that philanthropy may offer firms a mechanism to atone for social externalities and repair corporate reputation. Moreover, Brammer,

and Millington (2005) indicated that specific industries, such as alcohol and tobacco, may be especially vulnerable to accusations of negative externalities. Findings from their research suggest that higher corporate giving enhances a firm's reputation and that the impact of giving on reputation varies significantly across industries. We add to their previous findings by employing more narrowly defined industry effects as compared to the broad sectoral level used in their study. Fry et al. found that differences in public contact account for much of the inter-industry difference in corporate giving behavior. Similarly, Useem (1988) observed that there are important sectoral concerns that create inter-industry differences in corporate giving strategies. For example, commercial banks give disproportionately to health and human services while manufacturers of electrical equipment focus their giving on education.

*H5:* The ratio of charitable giving to receipts varies across industries.

We use the industry fixed effects approach pioneered by Schmalensee (1985) and used by a number of subsequent researchers (e.g. Powell, 1996; Wernerfelt and Montgomery, 1988), to capture inter-industry differences in giving ratios. Rumelt (1991) disputes the usefulness of industry fixed effects for explaining cross-sectional variations in profitability. For our models, industry fixed effects are included solely to capture inter-industry differences in charitable giving. The theoretical justification for including industry effects is found in the work of Brammer and Millington (2005), Fry et al. (1982), and Useem (1988). Our intention is to use the methodology employed by Schmalensee and guided by the theoretical models outlined in the charitable giving literature. Our use of the industry fixed effects specification should not be interpreted as an endorsement of their use to explain cross-sectional variation in profits.

Charitable contributions are expressed relative to total receipts in order to express corporate giving relative to firm size (i.e. scale the dependent variable). Failure to scale charitable contributions would bias the results in favor of large firms. We use total receipts rather than net income to scale the depen-

TABLE I  
Estimate regression coefficients charitable giving ratio related to firm variables and industry effects

Variable	Linear firm size, industry effects excluded	Cubic firm size, industry effects excluded	Linear firm size, industry effects included	Cubic firm size, industry effects included
INTERCEPT	0.00035(15.07)*	0.000323 (14.72)*	0.0016 (3.32)*	0.00065(1.59)
ADIN <sub>ij</sub>	7.09 E - 05 (3.19)*	7.17 E - 05 (3.24)*	6.49 E - 05 (3.04)*	9.91 E - 05(5.06)*
ROA <sub>ij</sub>	0.00058 (2.09)*	0.00042 (1.47)	-0.01 (-2.73)*	-0.0037 (-0.98)
FSIZE <sub>ij</sub>	2.36E - 11 (3.06)*	1.52 E - 10 (3.75)*	6.31 E - 12 (0.52)	1.32 E - 10 (3.32)*
FSIZE <sub>ij</sub> <sup>2</sup>	-	-4.75 E - 18 (-3.06)*	-	-4.16 E - 18 (-2.65)*
FSIZE <sub>ij</sub> <sup>3</sup>	-	3.15 E - 26 (2.83)*	-	2.92 E - 26 (2.21)*
IND <sub>j</sub>	Excluded	Excluded	Included	Included
R <sup>2</sup>	0.05	0.097	0.27	0.30
F-Statistic	15.34*	15.34*	2.78*	3.19*

t-Statistics in parentheses.

\*indicates significant at the  $\alpha \leq 0.05$  level.

dent variable based on the work of Useem (1988) who found that large firms give more regardless of profit.

**Empirical results**

The coefficients obtained from the estimation of equation (1) can be found in Table I. All t-statistics were computed using White’s robust standard errors. Moreover, the return on assets variable appearing as a regressor for the models presented in Table I represents the predicted value from the instrumental variable estimation described above. As stated previously, we estimate the relationship between charitable giving ratios and firm size in both linear

and cubic functional form. The cubic function allows for two bends or thresholds in the relationship between charitable giving ratios and firm size. Table II summarizes the empirical support for the five research hypotheses.

The first two columns of Table I contain the estimated coefficients for the models that exclude industry fixed effects. Column 1 contains the estimated coefficients for the linear model. Estimated coefficients for the cubic model are found in column 2. Examining the linear model, the coefficients for advertising intensity, firm size, and return on assets, a proxy for slack resources, all exhibit the hypothesized positive sign and are statistically significant. However, an R<sup>2</sup> of 0.05 indicates weak overall explanatory power for the model. The cubic model results in

TABLE II  
Empirical support for research hypotheses

Hypothesis	Linear firm size, industry effects excluded	Cubic firm size, industry effects excluded	Linear firm size, industry effects included	Cubic firm size, industry effects included
H1: Firm size	Support	Support	Fail to support	Support
H2: Cubic specification	-	Support	-	Support
H3: Slack resources (ROA)	Support	Fail to support	Support	Fail to support
H4: Advertising	Support	Support	Support	Support
H5: Industry	-	-	Support	Support

column 2 supports the hypothesis (H2) that philanthropy exhibits a non-linear relationship. The  $R^2$  for the cubic model is 0.097 as compared to the 0.05 for the linear model. While an  $R^2$  of 0.097 still denotes a weak overall fit, a near doubling of the  $R^2$  provides strong evidence for a cubic model specification. The coefficients for the linear, squared, and cubic firm size terms are all statistically different from zero. Moreover, signs for the estimated coefficients fit the plus-minus-plus sign pattern hypothesized above (H2). The advertising intensity variable, positive and significant in the linear specification remains positive and significant in the cubic function. However, the coefficient for return on assets is no longer statistically different from zero in the cubic firm size model specification, suggesting that slack resources are unlikely to contribute to a firm's philanthropic behavior. Finding a positive and statistically significant coefficient for return on assets when firm size is linear, but a statistically non-significant effect for ROA when the firm size effect is cubic provides evidence that previous findings of a positive effect of profitability on corporate giving may be due to improper specification of the firm size term.

The sign pattern for cubic firm size terms fit the hypothesized plus-minus-plus set forth above. Our findings are thus consistent with the arguments presented by Thompson et al. (1993) regarding the giving motivation for small firms. Small firms are frequently locally owned and this local ownership may provide incentives for generous giving to local causes. Similarly, our findings support Saiia et al. (2003) assertion regarding large firm giving. The increased visibility of large firms provides an incentive for increased charitable giving as the managers of these firms seek the image enhancing benefits that accrue from charitable contributions. Medium sized firms, on the other hand, have lower giving ratios because they generally lack the close ties to the community of small firms but are less visible than large corporations.

Column three of Table I contains the linear model with industry fixed effects included. The addition of industry effects to the linear firm size model increases the  $R^2$  from 0.05 to 0.27, with industry effects explaining 22% of the variation in the charitable giving ratio supporting H5. An industry effect of 22% is considered large. For example, Schmalensee's (1985) finding that industry effects explained slightly less than 20% of profit rate

variation was considered extremely important when published, launching the analysis of industry effects that led to literally dozens of subsequent scholarly works. Finding large industry effects, 22% of the variation in charitable giving, provides evidence for important inter-industry differences in giving behavior. A large industry effect is consistent with the views of both Useem (1988) and Fry et al. (1982). As stated above, Fry et al. predicted that inter-industry differences in giving behavior would arise due to inter-industry differences in public contact, whereas Useem hypothesized that there are differences between industries in giving emphasis.

Analysis of the continuously measured variables from the linear firm size model with industry effects reveals some interesting results. As in the case of the linear firm size model without industry effects, the coefficient for advertising intensity remains positive and statistically significant. However, the coefficient for firm size is not statistically different from zero, a finding that contrasts with the positive and significant firm size coefficient in the model with industry effects deleted. The loss of statistical significance when industry effects are added to the model suggests that the positive and significant linear model firm size coefficient may be capturing inter-industry differences in the firm size distribution rather than the hypothesized (H1) relationship between firm size and charitable giving. Our finding casts doubt upon the reported relationship between a linear firm size specification and giving levels, indicating a need to apply the industry effects specification to the data and models used in previous studies. Additionally, the coefficient for return on assets is positive and significant when industry effects are excluded from the model, but, negative and significant in the industry fixed effects specification. A negative effect for ROA, a proxy for slack resources, on the corporate giving ratio lacks support from previous research and may indicate a misspecified model.

Column 4 of Table I contains the cubic firm size model with industry effects included. An  $R^2$  of 0.30, consistent with cross sectional data research findings, indicates a model with stronger explanatory power than the previously examined models. When compared to an  $R^2$  of 0.10 for the cubic model with industry effects excluded, it is apparent that industry effects explain 20% of the total variation in charitable giving ratios. This



finding confirms the previous conclusion from the linear model regarding the importance of industry affiliation.

The coefficient for advertising intensity from the cubic model with industry effects included remains positive and significant. The advertising intensity coefficient is thus positive and significant in all four models estimated suggesting that the result remains unchanged regardless of whether industry effects are included or excluded and whether the firm size variable is entered in linear or cubic form. These results offer strong support for the finding of Fry et al. (1982) who found a positive relationship between advertising intensity and charitable giving. Our results appear to confirm the conclusion of Fry et al. that advertising and charitable contributions provide alternative means of generating goodwill.

The coefficient for return on assets, negative and significant in the linear model with industry effects included, is not statistically different from zero in the cubic model that includes industry effects. Sensitivity of the sign and significance level for return on assets related to the inclusion or exclusion of industry effects and to linear and cubic specification of firm size indicates that there is a complex relationship between firm size, profitability, and industry in explaining variations in charitable giving. Moreover, our findings suggest that the correct specification for charitable contributions is a model that is cubic in firm size and includes industry fixed effects. When the model is correctly specified, the coefficient for return on assets is not statistically different from zero. Firm size, considered by Useem (1988) to be the single most important predictor of charitable giving regardless of firm profitability, and industry affiliation rather than slack resources determine philanthropic behavior in a properly specified model. Moreover, the failure to properly address simultaneity between charitable contributions and profitability leaves open the possibility of biased and inconsistent estimators in previous studies. Our use of instrumental variables to address this simultaneity lends credibility to our results as compared to previous findings.

The coefficients for the cubic firm size terms retain the plus-minus-plus sign pattern reported for the cubic model with industry effects excluded. Moreover, the coefficients for the linear, squared and cubic terms are all statistically different from

zero. The cubic firm size model with industry fixed effects thus provides strong evidence to suggest that the finding of a U-shaped relationship between firm size and charitable giving ratios does not result from inter-industry differences in the firm size distribution. In short, the finding that charitable giving ratios model is cubic in firm size appears to be robust.

Table II provides an overview of the research hypotheses. Examining Table II, the linear firm size variable (H1) is significant only in the model that excludes industry fixed effects. It is apparent that the cubic corporate giving-firm size relationship (H2) is supported regardless of whether industry fixed effects are included or excluded from the model. Similarly, the positive and significant coefficient for the relationship between corporate giving and advertising (H4) does not appear to be sensitive to the presence of industry effects in the model. However, the slack resource hypothesis is only supported in those models that omit industry fixed effects. Our results suggest that slack resources and the industry fixed effects may measure similar dimensions. Finally, there is evidence for the importance of industry effects (H5) for both the linear and cubic firm size specifications.

## **Conclusion and managerial implications**

The purpose of this paper was to examine the relationship between charitable giving ratios and characteristics of both the firm and market. The IRS data used for this study allow an examination of these hypotheses across a much broader range of firm sizes and industries as compared to the data used for previous studies. Moreover, the empirical methods used explicitly account for possible simultaneity in the relationship between charitable giving and profitability. Two important results are offered. The first important conclusion relates to evidence of a cubic relationship between charitable giving ratios and firm size. Estimation of a cubic functional form for firm size reveals statistically significant coefficients with a plus-minus-plus sign pattern for the linear, squared and cubic firm size terms. A plus-minus-plus sign pattern suggests that small and large firms have higher giving ratios while giving ratios are lower for medium sized firms.

One possible explanation for the cubic relationship is that small firms give because they are frequently locally owned and thus close to the consuming public, while large firms give because of the greater visibility that comes from size. Small firms may find that charitable giving accomplishes more than building a positive local reputation. Non-profit organizations may also purchase goods and services from local businesses. Developing a reciprocal relationship between the firm and the focus of the firm's philanthropy may increase sales, contributing to revenue and profitability. Large companies benefit from national and international goodwill generated through well publicized gifts. While these gifts may be made locally, as in the case of Target Foundation's commitment to providing funds for community food, clothing and shelter needs, they are part of the company's global public relations message. Since medium sized firms are typically neither locally owned nor highly visible at the national or international levels, little incentive exists to give. The cubic model suggests that the results summarized by Wood and Jones (1995, p. 245) were likely determined by the positive relationship at the upper end of the firm size distribution.

The cubic relationship between charitable giving and firm size has important implications for business managers. The strategy literature has long maintained that firm size is an important component in determining optimal charitable giving strategy. Small firms generally thrive by following a niche strategy built upon strong customer relationships. Our findings suggest that generous corporate giving is most likely an important ingredient in building the customer relationships that are integral to the small firm's competitive edge. Small firms would be advised to adopt giving policies that are consistent with community corporate giving standards. Large firm survival is often predicated on the successful implementation of a market-wide strategy. However, as Saiia et al. (2003) have noted, a market-wide strategy often creates increased public relations scrutiny. Our results suggest that generous corporate giving provides an important avenue to the managers of large firms to purchase corporate goodwill.

The second result relates to the importance of industry effects. Estimation of the model with industry dummy variables both included and excluded from the model indicates that industry effects explain between 20% and 22% of the total

variation in giving ratios. Large industry effects provide evidence that industry affiliation is important in explaining cross sectional variation in charitable giving. The importance of industry effects revealed in our models thus supports the hypotheses of Useem (1988) and Fry et al. (1982) regarding the potential sources of inter-industry variation in giving behavior. Useem's hypothesis suggests that there are inter-industry differences in giving emphasis, while Fry et al. focus on differences in public contact that create inter-industry differences in the need to give.

The finding of strong industry effects in explaining variation in charitable giving has important managerial implications. Industry level differences in the giving culture influence the giving behavior of individual firms. These inter-industry differences could be the result of special public relations vulnerability related to product characteristics or the presence of particularly philanthropic minded firms that set the tone for all members of the industry. Industry giving culture may create an environment that requires firms to meet or exceed competitor philanthropy in order to maintain customer and community goodwill. Such industries challenge corporations to not only meet giving level norms but also to better target and promote philanthropy, receiving maximum benefit from each charitable dollar given.

### **Limitations and directions for future research**

While this study provides important insights into charitable giving, the limitations of the research suggest several directions for future studies. Our use of aggregated data from the IRS Sourcebook limits the analysis to average measures for ROA, charitable contributions to receipts, advertising intensity and firm size for each of the 11 size classes. However, the beauty of the IRS Sourcebook data and the rationale for its continued widespread use lies in the broad range of available size classes, a limitation of currently available firm-level datasets. As charitable giving gains importance for small, medium and large firms, other philanthropic giving data may emerge allowing for re-estimation of our models with firm-level data.

The current research focuses on corporate giving by U.S. corporations. While the data set incorporates information from multinational U.S. corpora-

tions, the data does not allow for an examination of cross-cultural differences in corporate philanthropy. In a survey of consumers' propensity to supporting French, German and U.S. corporate commitment to legal, ethical and philanthropic responsibilities, Maignan (2001) observed significant cross-cultural differences. Cross-cultural differences in consumer support for socially responsible companies may manifest in differences in corporate philanthropic behavior and profitability. An obvious extension of this research would be an examination of cross-cultural differences in potential profit, size and industry effects on corporate giving ratios.

As corporations expand the scope of corporate philanthropy to in-kind product donations, community service, and cause-marketing activities, opportunities exist to investigate the strategic value of different components of philanthropy. Hess et al. (2002) found that donating products and services and giving employees time for volunteer work contributed more to corporate image than large corporate gifts. While the IRS Sourcebook contains aggregate corporate giving data, future research may contribute to the understanding of corporate philanthropy by combining other datasets with data disaggregated into narrower corporate philanthropy categories with the models developed in this research.

### Appendix A

TABLE AI  
Size classes

Size classes	Asset range (in thousands)
1	0
2	\$1–100
3	\$100–250
4	\$250–500
5	\$500–1000
6	\$1000–5000
7	\$5000–10,000
8	\$10,000–25,000
9	\$25,000–50,000
10	\$50,000–100,000
11	\$100,000–250,000
12	\$250,000 or more

TABLE AII  
Industry codes

NAICS industry code	<i>n</i>	NAICS industry code	<i>n</i>	NAICS Industry Code	<i>n</i>	NAICS industry code	<i>n</i>
311115	8	325500	9	333510	10	444130	9
311300	7	325600	9	333610	7	444190	10
311400	7	325905	10	333900	11	444200	9
311500	7	326100	9	334110	7	445115	11
311615	8	326200	9	334200	8	445310	6
311800	9	327105	9	334315	8	446115	11
312110	8	327210	7	334410	9	447100	11
312120	4	327305	8	334500	10	448115	11
312135	7	331115	7	335105	7	451115	11
312200	3	331315	9	335310	9	452115	9
313000	8	331500	7	335900	10	522110	8
314000	9	332110	10	336105	9	522125	7
315000	7	332215	10	336410	8	522215	11
315990	8	332300	10	336610	7	522292	11
322100	7	332400	8	336995	8	522295	10
322200	8	332810	9	337000	11	522300	10
324110	7	332900	10	339110	10	523110	8
324125	9	333100	9	339900	11	523120	10
325100	8	333200	8	441115	11	523135	7
325200	6	333310	11	441215	11	523905	11
325410	8	333410	8	444115	7		

### Note

<sup>1</sup> We also estimated a quadratic form for the firm size variable. The coefficients for both the linear and squared terms were not statistically different from zero. The significance of the firm size terms in the cubic model and lack of significance for firm size in the quadratic model suggests that there are two separate thresholds in the firm size-charitable giving relationship. A quadratic model, which allows only one turn, cannot capture the complexity of the relationship between firm size and charitable giving. Moreover, the adjusted  $R^2$  for the quadratic model was lower than the adjusted  $R^2$  for either the linear or cubic models. Given the lack of success for the quadratic model, these results are not reported.

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