

The Price Elasticities of Charitable Contributions: A Meta-Analysis

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Tax deductibility has been recognized as a motive for charitable donations. This article considers charitable donations as purchases that consumers make, and it examines the effects of changes in the tax deductibility (i.e., the price of donating) on charitable donations. The meta-analysis includes approximately four decades of estimates of the price elasticity of charitable giving. The authors discuss implications for policy makers and the marketers of charities.

If charity cost nothing, the world would be full of philanthropists.

—Rosten (1972, p. 136)

Charitable giving is prevalent. In 2001, 89% of Americans donated to charity (Sullivan 2002), and in 2000, people donated an estimated \$200 billion to charities in the United States alone (Lindahl and Conley 2002). This generosity is due in part to altruistic motivations, but researchers also argue that egoistic motives play important roles in the decision to donate to charity (Bendapudi, Singh, and Bendapudi 1996; Piliavin and Charng 1990). Altruistic motives focus on the benefits that a recipient receives, whereas egoistic motives are based on the reward given back to the donor, including intangibles, such as self- and other-esteem. Thus, Smith (1980) argues that an increase in the cost of giving can be expected to lead to a decrease in charitable support for many charitable organizations. Specifically, researchers have found tax incentives to be egoistic motivators for donation to charity (Cermak, File, and Prince 1994; Dawson 1988).

For the donor, the level of tax deductibility determines the “cost” of the contribution. Therefore, when the tax deductibility of donations changes, so does the cost of the purchase. Steinberg (1990) argues that donations are no different than any other purchase a consumer makes. This article examines the effects of changes in the tax deductibility of donations on charitable support. If changes in tax deductibility have a disproportional effect on charitable contributions, public policy for such tax deduction can be used as an effective stimulus to increase charitable support. In other words, if a reduction in tax costs of \$1 results in an increase of more than \$1 in charitable contributions, such tax policy can be considered effective support for charitable organizations. The potential for lower tax costs of donations to lead to increased charitable support has important implications both for governments that allow tax deductions and for charities that rely on people’s donations. For example, such an effect would enable the government to justify the

transfer of responsibility for the provision of some public services to charities and nonprofit groups.

The literature examining the effects of changes in tax deductibility of charitable donations has produced mixed results, and the debate has spanned the past four decades (Auten, Sieg, and Clotfelter 2002). This article uses meta-analytic techniques to provide robust estimations of the elasticities of charitable donations with respect to changes in tax deductibility, and it estimates moderators that affect these elasticities.

We organize the article as follows: We present a brief overview of the debate about the efficiency of the tax deduction for charitable donations. Next, we discuss the benefits of examining the price elasticities of donations through meta-analytic techniques. We offer hypotheses about the effects of changes in tax deductibility of charitable donations and present the results of our meta-analysis. We conclude with a discussion of the results and suggestions for future research opportunities.

The Efficiency of Charitable Donations

Enacted in the United States in 1917, the charitable donation tax deduction was designed so that income tax did not discourage charitable giving, and these deductions are often considered a close substitute for government programs (Clotfelter and Steuerle 1981). Historically, government funding has been second only to individual donations as the largest source of operating revenue for nonprofits (Kirchhoff 2003). However, since the 1980s, governments have been reevaluating and reducing their role in the delivery and support of social services (Larson 1995). This trend is global, occurring in the United States (Miller 1998), Canada (Foster and Meinhard 2002), Australia (Bednall et al. 2001), New Zealand (Chaney and Dolli 2001), and Europe (Olabuena 2000), and it has pushed many charities to rely even further on individual consumers as a key source of funding. When governments forgo tax revenue in exchange for charitable donations, they are offering an indirect form of charitable support. The aggregate amount of these deductions is significant; the estimated government revenue lost as a result of the deduction in the United States from 2001 to 2005 was \$145 billion (Colombo 2001).

The price of charitable contributions is the portion of the donation not returned in the form of a tax deduction or

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credit. For people who itemize charitable deductions on their tax returns, the price of an additional dollar in contributions is $(1 - T_m)$, where T_m is the marginal income tax rate (Reece 1979). Bittker (1972, p. 155) states, "In the indictment of tax deductions for charitable contributions, the charge is that they are inefficient because such a large fraction of charitable gifts would be forthcoming in any event that the incremental contributions stimulated by the deduction are too small to justify their cost." However, a policy of increased tax deductibility can be efficient if a drop in the tax cost (i.e., the cost of the donation) results in a disproportionate increase in donations. Steinberg (1990) calls such programs "treasury efficient" and states that programs are efficient only if charitable giving is price elastic.

The price elasticity of giving is defined as the percentage change in donations that results from a 1% change in the price of giving, all else being equal (Steinberg 1990). If price elasticity is a negative number, it means that a decrease in the price causes an increase in giving. Under the assumption of a reasonably informed donor (i.e., a donor for whom the price of donation is at least somewhat important), price elasticities can be expected to be negative. If elasticity exceeds 1 (in absolute value), giving is considered elastic; otherwise, giving is inelastic. For example, for negative but inelastic elasticities of charitable giving, in considering the additional savings from the reduced cost, "people keep some and give some away" (Hood, Martin, and Osberg 1977, p. 661). The current article focuses on negative elasticities, that is, elasticities that are theoretically supported on the basis of a reasonably informed donor. (Although two studies we examine herein provide estimates of positive elasticity, the authors of those studies are unable to provide theoretical rationale in support of positive price elasticities.) "Lower" price elasticities refer to elasticities that are lower in absolute value (i.e., less elastic). In other words, an elasticity of -1.5 is considered less elastic (i.e., lower) than an elasticity of -2.5 .

Tellis (1988, p. 332) defines elasticities as "the ideal measure for the meta-analysis, being both units-free and easily interpreted." The majority of researchers use regression to compute the price elasticity of charitable giving. However, correlational data for the relationship between price (tax deductibility) and charitable giving are preferred, given the potential for other variables in the regression model to confound the results. Fortunately, the relationship between correlations and elasticities (i.e., beta coefficients) is typically strong (Peterson and Brown 2005), and many of these variables can be captured as potential moderator variables through the meta-analysis process. Furthermore, the use of regression-based data in the form of elasticities for meta-analysis has a long history across a variety of disciplines, including marketing (e.g., Andrews and Franke 1991; Assmus, Farley, and Lehmann 1984; Tellis 1988), economics (Kremers, Nijkamp, and Rietveld 2002), and public health (Gallet and List 2003).

Why a Meta-Analysis?

The effects of tax rates and income on charitable contributions have been studied extensively. However, the results to date span a wide range of samples, examine a diverse set of variables and data sources, and often present conflicting

findings. Estimates for price elasticity range from -7.07 (Robinson 1990) to $+1.12$ (Wu and Ricketts 1999). Duquette (1999, p. 16) states that "most studies have found giving to be highly price elastic," whereas other researchers have presented evidence that strongly challenges the traditional consensus that tax incentives are a powerful stimulus to giving (Bristol 1985; Steinberg 1990). Auten, Sieg, and Clotfelter (2002, p. 380) summarize both the lack of and the need for clarity in the literature as follows: "Since there continues to be serious debate about tax proposals that could permanently change the price of giving, the effect of persistent price changes on charitable giving is therefore of considerable practical importance."

Although there have been numerous literature reviews in the area, they have lacked the mathematical rigor of a formal meta-analysis. Brooks (2002) refers to the work of Steinberg (1990) as a "meta-analysis," though it is essentially a literature review updating new findings published subsequent to Clotfelter's (1985) work, and it contains no mathematical analysis or conclusions based on those studies. Similarly, Clotfelter's (1985) seminal work on the effects of tax on charitable giving examines the effects of variables such as income, but it does not provide a proper meta-analytic review of the relevant literature. However, such literature reviews provide the basis for our hypotheses development.

Hypotheses

This article examines the effects of changes in tax deductibility on charitable giving, which is of inherent importance to policy makers. In addition to our estimation of this basic relationship, we explore eight moderators that can affect it. These moderators fall into one of two broad categories: those that examine measurement and model specification issues and those that examine donor or donation characteristics.

Measurement/Model Characteristics

Early research examining the price elasticity of charitable giving typically used measures of tax costs based on the year in which the donation was made. Subsequent researchers began to study a more long-term measure of tax costs in which the measure is taken over a period of years. Such permanent measures of tax costs smooth year-over-year changes in tax rates and are essentially averages of this variable across the years surrounding the year of analysis. The hypothesis behind this measure is that donors change donation behavior in response to changes in tax rates they perceive as short term in nature and are less likely to respond immediately to changes they view as long term (Bakija 2002).

H_1 : Price elasticities reported in studies that use permanent measures of tax rates are lower than those in studies that use temporary measures.

Similar to the previous variable, studies have used one of two data sources: panel (i.e., multiyear) or cross-section (i.e., one year) data. A panel data set follows the same group of donors over time. Steinberg (1990) notes that studies leveraging panel data sets have obtained results that depress the elasticities of charitable giving, and Barrett (1991) notes

three benefits of panel data: (1) They are more likely to generate a more accurate measurement of the price elasticity of giving, (2) they suffer to a smaller degree from statistical biases caused by the omission of relevant variables, and (3) they enhance the ability to distinguish between separate price and income effects. Clotfelter (1990) also argues that there is a lag between changes to price and giving behavior.

As with the issue of permanent measures of tax costs, studies that consider only one year will likely reflect only short-term donor response. Because people tend to respond to short-term events more strongly than they do to long-term developments (see Bakija 2002; Steel and König, *in press*), cross-sectional (*i.e.*, short-term) data should provide higher elasticities, whereas panel data should provide lower elasticities.

H₂: Price elasticities reported in studies that use panel data are lower than those in studies that use cross-sectional data.

Studies have developed data sets from one of two sources: tax-filer data or survey data. Studies that use tax-filer data benefit from behavioral data insofar as the data contain a supposedly more accurate measure of variables, such as donation amount, income, age, and so forth, because they are taken directly from income tax returns. Clotfelter (1985) speculates that elasticities derived from survey data may be artificially high. In addition, survey data, particularly when the phenomenon of charitable donation is measured, are expected to suffer from socially desirable responses (Fisher 2000; Fisher and Ackerman 1998), and therefore the price elasticities are expected to be inflated.

H₃: Price elasticities reported in studies that use tax-filer data are lower than those in studies that use survey data.

Similar to H₂, the degree to which a person can be expected to cheat on income tax returns is expected to influence his or her measured price elasticity. Slemrod (1989) shows that overreporting of gifts for tax purposes probably depresses measured price elasticities. Clotfelter (1985) also finds slightly lower price elasticities for audited tax data.

H₄: Price elasticities reported in studies that use audited deduction measures are lower than those in studies that use self-reported tax data.

Another final issue related to the models used to estimate elasticities is the net worth of a donor, which can be expected to affect the ability to make donations and to take advantage of changes in tax deductibility. For donors with a greater net worth, more potentially disposable cash or assets means that they are more likely to be in a position to take advantage of changes in tax deductibility. Indeed, McNees (1976) finds that net worth is a significant variable affecting the price elasticity of donations.

H₅: Price elasticities derived from models that include net worth produce higher elasticities than those derived from models that do not include net worth.

Donor/Donation Characteristics

People donate to charity through a range of mechanisms, including cash donations, gifts of assets, volunteer time, and bequests through estate. Each of these mechanisms has been

studied to some extent in the literature. However, bequests are more likely than other donations to be carefully planned, often with the help of financial and tax-planning professionals (Cermak, File, and Prince 1994), whereas “day-to-day” donations are often the result of limited information searches and personal involvement (Hibbert and Horne 1997). Given the degree to which bequests are planned and calculated on the basis of issues such as taxation, they are expected to be more responsive to changes in the price of donation.

H₆: Price elasticities for charitable donations in the form of bequests are higher than those for donations in other forms.

Researchers have argued that income level is a key determinant of the price elasticity of charitable donations. For example, Auten, Cilke, and Randolph (1992) find that the giving patterns of higher-income people are more sensitive to changes in the tax price of donations. In addition, lower-income donors have been found to be price insensitive (Anderson and Beier 1999). However, other researchers have found that lower-income consumers are more prone to be highly responsive to the tax price of giving (Clotfelter and Steuerle 1981; Lankford and Wyckoff 1991). Davie (1985) finds that despite increases in tax costs of giving, high-income donors do not curtail their giving behavior. Clotfelter (1985, p. 71) summarizes these findings as follows: “[S]imply put, the price elasticities for different income groups have not been determined very precisely.”

The motivations for high-income donors are different from those of average consumers. Although tax advantages have been identified as a motivator for donations by people with high incomes, Cermak, File, and Prince (1994) find that this motivation was dominant in only 27% of their sample. More prevalent motivators included reciprocity, family tradition, and social ties. Similarly, Kottasz (2004) finds that tax incentives are a low priority for affluent donors. Long-term relationships with nonprofits have also been identified as key variables in donor behavior among higher-income people (Lindahl 1995). To the extent that these other motivators are expected to be behind the decision of higher-income people to make donations, tax incentives can be expected to have reduced effects. Therefore, income level among donors is not expected to be a significant predictor of price elasticity.

H₇: Price elasticities among higher-income donors are not significantly different from those among lower-income donors.

Similar to our preceding discussion, it has been argued that the use of tax-filer data by many studies skews the sample toward higher-income households by excluding those households that do not itemize charitable donations on their tax returns (Robinson 1990). Nonitemizers were allowed to deduct charitable donations from 1982 to 1986 under the Economic Recovery Tax Act of 1981; the intention was to stimulate “giving by all individual taxpayers, including those who do no benefit from itemizing” (U.S. House 1985, p. 112). However, the provision was not extended beyond 1986 because of questions surrounding its efficiency at stimulating new donations:

Extension of the contribution deduction to nonitemizers creates unnecessary complexity, while probably stimulating little addi-

tional giving and presenting the [Internal Revenue Service] with a difficult enforcement problem.... It is doubtful that the first dollars of giving, or the giving of those who give only modest amounts, are affected much by tax considerations. (U.S. Department of Treasury 1984, p. 82)

Indeed, Reece and Zieschang (1985) find markedly different behavior between itemizers and nonitemizers. Itemizer status is hypothesized to be connected to home ownership status; the majority of those who itemize do so to claim the deduction of mortgage interest paid (Duquette 1999). Duquette (1999) also hypothesized that nonitemizer status is correlated with lower education levels, given the lack of understanding of the tax code required. He states (p. 204) that nonitemizers may simply be “intrinsically less responsive to tax incentives” than itemizers.

H₈: Price elasticities among itemizers are higher than those among nonitemizers.

Data and Method

The study of charitable giving behavior has been explored in fields as diverse as economics, sociology, psychology, marketing, and political science. Therefore, a broad and exhaustive search was required to gather appropriate data. Two significant literature reviews serve as the basis for the search. Clotfelter (1985) summarized the research to date that examined the tax effects on charitable giving. Steinberg (1990) updated Clotfelter’s work and examined specific advances in the study of tax effects on charitable giving. These two sources were virtually all encompassing of the work before 1990. To augment these two reviews, we took the following steps.

First, we searched the following databases for all available years to the present: ABI/Inform, Business Source Premier, PsychINFO, Proquest Digital Dissertations, MEDLINE, ERIC, and EconLit. We based these searches on the keywords “charitable giving,” “charity,” “contribution,” “bequest,” “donation,” “elasticity,” and “tax effects.” Second, we searched the Social Sciences Index (i.e., Web of Science) for all publications that cited the seminal works of Clotfelter (1985) and Steinberg (1990). Third, we attempted to contact authors who published two or more articles on the effects of taxation on charitable giving. Although this effort was intended to address the “file drawer” problem in meta-analysis, we received no responses. Finally, we sourced the references contained in the articles to uncover additional publications, including conference proceedings. When we uncovered conference proceedings or working papers that were subsequently published, we used the published article.

Initially, we identified 535 sources for review. After we excluded sources that did not specifically examine the effects of tax on charitable giving or failed to provide data, we considered a total of 69 works, providing a total of 138 usable observations of the dependent variable and an overall sample size of 1,418,212. The majority of the sources are journal publications, though we include four books, five conference papers, and two unpublished manuscripts. Table 1 outlines the source material for the review.

Moderator Search

We coded studies to record potential moderators of the dependent variable. No corrections were necessary (e.g., to account for potential range restriction or reliability issues to allow for variables to be uncovered as potential moderator variables). Some studies reported extreme values of price elasticity. We consider results both with and without such outliers. Specifically, we provide descriptive data that represent the full data set and the data with outliers removed. Figure 1 shows a plot for the data; the five outliers are to the left of the vertical dashed line.

We attempted to use multiple individual estimates of elasticity from any given study. For example, if a study reported elasticities from segments within the sample, we used these individual estimates rather than the overall measure to account for potential moderators more effectively. However, some studies reported multiple elasticities but failed to report other critical information, such as segment sample sizes. In the case of individual estimates based on potential moderators, we coded estimates but used them only in the analysis of that moderator. A significant problem with the data was the income level of the donors studied. There was little consistency among studies with respect to participants’ income levels. Although most studies used a general population (with many excluding donors with less than \$4,000 in annual income), few of the studies that reported usable estimates for income brackets did so with consistent income brackets. Therefore, we completed coding for only two segments: those with more than \$100,000 in annual income and those with less than \$100,000 in annual income. Because of the relatively broad categories, we used a relatively crude estimate that did not factor in inflation rates. All the samples reporting income were in U.S. dollars, and we contacted authors to obtain the necessary information when possible. To ensure that we accurately transcribed all the data from the source articles, we used two independent coders. Following the coding procedure that Orwin (1994) outlines, when inconsistencies between coders were detected, the source article was rechecked and the data were corrected. Initial coding produced a consensus on 93% of the observations (128 of 138), and a consensus was reached on the remaining 10 observations as we described previously.

To estimate moderator effects, we regressed the independent variables against the dependent variable, price elasticity. Although a variety of techniques for detecting moderators through meta-analysis are possible, weighted least squares should provide the most accurate results (Steel and Kammeyer-Mueller 2002). Thus, we used weighted least squares in the review and dummy coded categorical variables. Consistent with Hunter and Schmidt’s (1990) meta-analytic method, we based weights on sample size. For studies that did not include a sample size, we conservatively substituted a sample size of 3966 as a proxy. It reflects a sample size of the average of the bottom three quartiles of the data and allows the study to be included in the analysis without a likelihood of being overweighted. We excluded outliers greater than three standard deviations from the mean from the analysis, though we evaluated the impact of these exclusions on the basic analysis. We used sample sizes of each observation as weights. We limited analysis to cases

Table 1. Summary of the Studies in the Meta-Analysis

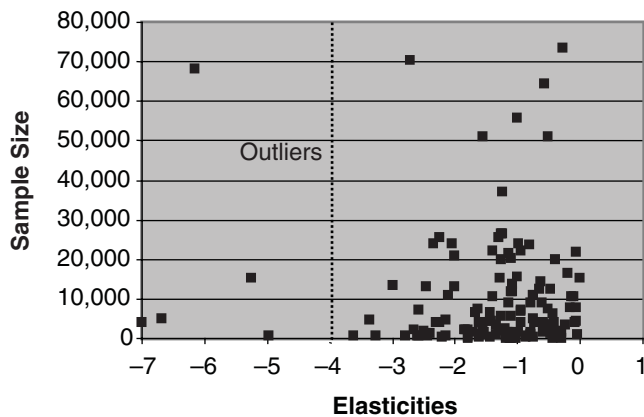
Study	Elasticity (Range)	Permanent/ Temporary Tax Measure	Panel/Cross- Sectional Data	Tax-Filer/ Survey Data	Donation Type
Abrams and Schitz (1978)	-1.1	Temporary	Cross-section	Tax filer	Donation
Abrams and Schitz (1984)	-1.44	Temporary	Cross-section	Tax filer	Donation
Apinunmahakul and Devlin (2004) ^a	-1	Temporary	Cross-section	Survey	Donation
Auten and Rudney (1984)	-.78	Temporary	Panel	Tax filer	Donation
Auten and Rudney (1990)	-.14 to -1.4	Permanent	Panel	Tax filer	Donation
Auten, Cilke, and Randolph (1992)	-1.11	Temporary	Panel	Survey	Donation
Auten and Joulfaian (1996)	-1.1 to -2.50	Temporary	Cross-section	Tax filer	Donation/ bequest
Auten, Clotfelter, and Schmalbeck (2002)	-.52 to -.95	Permanent	Panel	Survey	Donation
Auten, Sieg, and Clotfelter (2002)	-.4 to -1.26	Temporary	Panel	Tax filer	Donation
Bakija (2002)	-.2 to -.252	Permanent/ temporary	Panel	Tax filer	Donation
Bakija, Gale, and Slemrod (2003)	-.162	Temporary	Cross-section	Tax filer	Bequest
Barrett (1991)	-1.09	Temporary	Panel	Tax filer	Donation
Barrett, McGuirk, and Steinberg (1997)	-.47	Temporary	Panel	Tax filer	Donation
Barthold and Plotnick (1984)	-.75	Temporary	Panel	Tax filer	Bequest
Boskin (1976)	-1.2	Temporary	Cross-section	Tax filer	Bequest
Boskin and Feldstein (1977)	-2.14 to -2.44	Temporary	Cross-section	Survey	Donation
Bradley, Holden, and McClelland (2000)	-.78 to -2.56	Temporary	Panel	Survey	Donation
Broman (1989)	-.39	Temporary	Panel	Tax filer	Donation
Brooks (2002) ^a	-6.68	Temporary	Cross-section	Survey	Donation
Brown (1987)	-2.57 to -3.62	Temporary	Cross-section	Survey	Donation
Brown and Lankford (1992)	-1.62 to -1.79	Temporary	Cross-section	Survey	Donation
Choe and Jeong (1993)	-2.45	Temporary	Panel	Survey	Donation
Christian and Boatsman (1990)	-2.0	Temporary	Cross-section	Tax filer	Donation
Christian, Boatsman, and Reneau (1990)	-.99 to -1.56	Temporary	Panel	Tax filer	Donation
Chua and Wong (1999) ^a	-.98 to -6.15	Temporary	Cross-section	Tax filer	Donation
Clotfelter (1980)	-.24 to -1.55	Temporary/ permanent	Panel	Tax filer	Donation
Clotfelter (1983)	+.06 to -1.60	Temporary	Cross-section	Tax filer	Donation
Clotfelter (1985)	-.35 to -2.66	Temporary	Panel	Tax filer	Donation/ bequest
Clotfelter and Steuerle (1981)	-1.27	Temporary	Panel	Tax filer	Donation
Dunbar and Phillips (1997)	-3.36	Temporary	Panel	Tax filer	Donation
Duquette (1999)	-.64 to -1.24	Temporary	Panel	Survey	Donation
Dye (1978)	-2.25	Temporary	Cross-section	Survey	Donation
Dye (1980)	-.6	Temporary	Cross-section	Survey	Donation
Feenberg (1987)	-1.63	Temporary	Panel	Survey	Donation
Feigenbaum (1980)	-.44	Temporary	Panel	Tax filer	Donation
Feldstein (1975a)	-.29 to -1.8	Temporary	Panel	Tax filer	Donation
Feldstein (1975b)	-1.24	Temporary	Panel	Survey	Donation
Feldstein and Clotfelter (1976)	-1.15	Temporary	Cross-section	Survey	Donation
Feldstein and Taylor (1976)	-1.09 to -1.28	Temporary	Panel	Survey	Donation
Fisher (1977)	-2.3	Temporary	Cross-section	Tax filer	Donation
Glenday, Gupta, and Pawlak (1986) ^a	-.15	Temporary	Panel	Survey	Donation
Greene and McClelland (2001)	-.54	Permanent	Cross-section	Survey	Bequest
Greenwood (1993)	-.43	Temporary	Cross-section	Tax filer	Donation
Hood, Martin, and Osberg (1977) ^a	-.86	Temporary	Panel	Tax filer	Donation
Jones (1983) ^a	-.60	Temporary	Cross-section	Survey	Donation
Jones and Posnett (1991) ^a	-.07	Temporary	Panel	Survey	Donation
Joulfaian (1991)	-3.00	Temporary	Cross-section	Tax filer	Bequest
Joulfaian (2000)	-.74 to -2.58	Temporary	Cross-section	Survey	Bequest
Joulfaian and Rider (2004)	-1.14 to -2.15	Temporary	Cross-section	Tax filer	Donation
Kingma (1989)	-.43	Temporary	Cross-section	Survey	Donation
Lawrence and Saghafi (1984)	-1.18	Temporary	Panel	Survey	Donation
Lindsey (1987)	-1.23 to -2.56	Temporary	Cross-section	Tax filer	Donation
McClelland (2004)	-1.85 to -2.14	Temporary	Cross-section	Tax filer	Bequest
Newsome, Blomquist, and Romain (2001)	-.27 to -.58	Temporary	Panel	Tax filer	Donation
O'Neil, Steinberg, and Thompson (1996)	-.47 to -2.24	Temporary	Panel	Survey	Donation

Table 1. Continued

Study	Elasticity (Range)	Permanent/Temporary Tax Measure	Panel/Cross-Sectional Data	Tax-File/Survey Data	Donation Type
Randolph (1995)	-.51 to -1.55	Temporary/permanent	Panel	Tax filer	Donation
Reece (1979)	-1.19	Temporary	Cross-section	Survey	Donation
Reece and Zieschang (1985)	-.85	Temporary	Cross-section	Survey	Donation
Reece and Zieschang (1989)	-2.72	Temporary	Panel	Survey	Donation
Ricketts and Westfall (1993)	-1.06	Permanent	Panel	Tax filer	Donation
Robinson (1990)	-1.43 to -7.07	Temporary	Panel	Survey	Donation
Rudney (1985)	-.61	Temporary	Panel	Tax filer	Donation
Schiff (1985)	-2.79 to -4.97	Temporary	Cross-section	Survey	Donation
Schwartz (1970)	-.376 to -1.23	Temporary	Cross-section	Tax filer	Donation
Slemrod (1989)	-2.04 to -2.34	Temporary	Cross-section	Tax filer	Donation
Steinberg (1985)	-.08	Temporary	Cross-section	Survey	Donation
Taussig (1967)	0 to -.1	Temporary	Cross-section	Tax filer	Donation
Tiehen (2001)	.02 to -2.41	Temporary	Cross-section	Survey/tax filer	Donation
Wu and Ricketts (1999)	+.12 to -.2	Temporary/permanent	Panel	Tax filer	Donation

^aNon-U.S. population samples.

Figure 1. Plot of Effect Sizes



for which there were at least five cases (*k*) per moderator variable (Tabachnick and Fidell 1989).

Results

The weighted mean of the price elasticity of giving is -1.44 , with a standard deviation of 1.21 . Thus, on average, a 1% reduction in the cost of charitable giving (i.e., an increase in the charitable deduction) is expected to provide an increase in donations of 1.44%. The weighted mean of -1.44 is slightly greater than the previously accepted range of -1.1 to -1.3 (Clotfelter 1985). However, when outliers more than three standard deviations from the mean are removed from the analysis, the weighted average of price elasticities falls to -1.11 , which is at the lower end of the generally accepted estimates.

In addition, we consider the stability of this finding with respect to the file drawer hypothesis. It suggests that there could be unpublished studies that have lower values, thus decreasing the estimate of our effect size. Although our literature review specifically attempted to locate any unpublished work, we assess its possible impact here. Initially, we can examine a graphical distribution of effects (see Figure 1) to determine whether the distribution is nonsymmetrical. After excluding outliers, there remains a skew of the data toward the more negative estimates of elasticity. Furthermore, the data appear to be markedly truncated at an elasticity of zero. Given that elasticity estimates greater than zero are not theoretically supported, there may be publication bias excluding such findings. However, we can mathematically assess the file drawer problem in various ways. First, Begg (1994) suggests the use of a rank correlation test, specifically Kendall's tau. Correlating sample sizes with correlations generates a coefficient of $.11$, which is not significant ($p = .067$), suggesting that potential publication bias is not substantive. Second, we can consider how many of these undiscovered studies must exist to affect our current analysis. The results indicate that at least 70 estimates of negative but inelastic giving (i.e., less than one in absolute value) with an average sample size of 11,000 are required to accept the null hypothesis that giving is not negatively elastic. Similarly, at least 242 estimates of no elasticity (i.e., an elasticity value of zero) with an average sample size of 11,000 are required to accept the hypothesis that charitable donations are elastic below a level of $-.5$ (i.e., that consumers do not donate to charity at least half of cost savings due to increased tax deductibility). Thus, our basic finding appears to be robust.

However, the wide range of elasticities reported suggests that this basic estimate is affected by moderator variables. To examine moderator effects, we conducted regressions on the data set without outliers. Collinearity diagnostics indi-

cate limited relationships among the independent variables; all inflation factors were below 1.19. We conducted subsequent analysis to examine the Mahalanobis' distance for each observation and to identify potential outliers in addition to the five outliers we already deleted from the analysis. This examination revealed six additional outliers with a chi-square value greater than the critical value of 22.458 (degrees of freedom = 6); we removed these from the data

and reran the analyses. The results of a multivariate analysis for six of the eight hypotheses (H₁–H₆) appear in Table 2, Panel A.

We were unable to run the variables for two hypotheses, donor income (H₇) and itemizer status (H₈), in the primary multivariate model because of the limited number of cases and the subsequent deletion of cases and variables from the multivariate model. In our subsequent multivariate analyses,

Table 2. Moderator Effects

A: Results of Multiple Regression (n = 127; R² = .140, F = 3.256, p = .005)							
Hypothesis/Variable	N (1)	K (2)	Mean (3)	B^a (4)	t-Value (5)	Significance (6)	Hypotheses
Permanent Tax							
Yes	58,385	10	-.829	.252	.824	.432	H ₁ : Not supported
No	1,119,266	117	-1.1368				
Data Source							
Panel	1,004,590	75	-1.0044	.112	.568	.571	H ₂ : Not supported
Cross-section	173,061	52	-1.4985				
Data Source							
Tax filer	472,226	63	-1.0807	.514	3.653	.001	H ₃ : Supported
Survey	705,425	64	-1.2914				
Donations							
Audited	62,991	5	-1.24	-.509	-.519	.605	H ₄ : Not supported
Unaudited	1,114,660	122	-1.064				
Net Worth							
Yes	272,835	28	-1.2699	-.287	1.785	.077	H ₅ : Not supported
No	904,816	99	-1.4142				
Type of Donation							
Bequest	34,171	8	-1.5038	.835	2.05	.043	H ₆ : Supported
Other	1,143,480	119	-1.1762				
B: Results of Multiple Regression with Donor Income (n = 36; R² = .107, F = 1.282, p = .297)							
Data Source							
Tax filer	86,274	14	-.9729	.657	.855	.073	N.A.
Survey	270,072	22	-1.0291				
Net Worth							
Yes	201,215	15	-.802	.193	.566	.575	N.A.
No	155,131	21	-1.1538				
Donor Income							
\$100K and above	129,389	16	-.9081	.064	.222	.825	H ₇ : Supported
Less than \$100K	226,957	20	-1.0865				
C: Results of Multiple Regression with Itemizer Status (n = 84; R² = .144, F = 2.614, p = .031)							
Permanent Tax							
Yes	106,773	10	-.826	.447	1.362	.177	N.A.
No	839,021	74	-1.2412				
Data Source							
Panel	839,925	58	-1.0757	-.156	-.464	.644	N.A.
Cross-section	105,869	26	-1.4996				
Data Source							
Tax filer	353,132	39	-.9875	.420	1.809	.074	N.A.
Survey	592,662	45	-1.345				
Net Worth							
Yes	230,706	16	-.9213	.551	1.729	.088	N.A.
No	715,088	68	-1.3028				
Itemizer Status							
Itemizer	897,821	78	-1.0535	.192	.456	.650	H ₈ : Not supported
Nonitemizer	47,973	6	-2.99				

^aUnstandardized coefficients.

Notes: Weighted differences may be substantially larger or smaller than raw differences. N.A. = not applicable.

we analyzed these remaining hypotheses with the limited number of cases available. Specifically, Table 2, Panel B, shows the results for the analysis, including the donor income variable (H_7), with a reduced sample size of only 36 observations. Listwise deletion resulted in the inclusion of only three variables in the second model.

Finally, we examined the variable outlined in H_8 , itemizer status, with the same approach as that for donor income. We included it in a multivariate model with a reduced sample size of 84. In addition to the deletion of the variable examining audited donations (fewer than the required five cases available), we deleted the donation type variable (bequest/nonbequest) because it became a constant after listwise deletion of cases. Table 2, Panel C, shows the results of this third model.

As is suggested by the unstandardized regression coefficients in Column 4 of Table 2, the significant moderators include the use of survey versus tax-filer data ($p = .001$), regardless of whether the donation is a bequest or not ($p = .043$). An examination of the standardized coefficients reveals that the use of tax-filer data versus survey data appears to be the single largest moderator of price elasticity. We discuss each of the specific hypotheses in turn.

Permanent Measures of Tax Rates

On the basis of the multivariate regression, it appears that permanent measures of tax rates do not have a significant effect on the elasticity of charitable contributions. Although the mean estimate from the samples that use permanent measures is negatively inelastic at $-.829$ and the mean estimate from short-term measures is -1.14 , the results are not significant ($p = .432$). Therefore, it does not appear that donors are more likely to take advantage of lower prices if they perceive those changes as more short term in nature. Thus, H_1 is not supported.

Data Source: Panel Versus Cross-Section

To ensure that studies using cross-sectional data are estimating elasticities at points in time following changes in tax costs, we examined the average lag time between reported tax rate changes and observed behavior. The average lag time was less than 1 year, indicating that the majority of cross-sectional studies capture short-term effects when the average span of panel data is 6.8 years. Although the use of panel data appears to have a marked effect on lowering the estimated price elasticity of giving—estimates that use panel data reported a mean of -1.00 compared with a mean of -1.50 for studies that use cross-sectional data—these results are not statistically significant ($p = .571$). Thus, H_2 is not supported.

Data Source: Tax-Filer Versus Survey

The use of tax-filer data versus survey data appears to be strongly related to the price elasticity of giving. Means for estimates that use tax-filer data are -1.08 compared with -1.29 for studies that use survey data. The multivariate model supports this finding ($p = .001$). Thus, H_3 is supported.

Audited Tax Data

The use of audited tax data versus unaudited data appears to have no effect on the dependent variable. Studies that use

audited financial data report a mean elasticity of -1.24 , whereas those that report unaudited data report a mean elasticity of -1.06 . The lack of significance in the regression may be due in part to the relatively small number of estimates that have used audited tax data ($k = 5$ versus $k = 122$ for unaudited data). However, H_4 is not supported.

Net Worth

Similar to permanent income, the inclusion of net worth as a variable is not significant ($p = .077$). Means between the two groups are also similar (-1.27 versus -1.41). Thus, H_5 is not supported.

Donation Type: Bequests Versus Donations

In H_6 , we considered the price elasticity of giving in the form of a bequest compared with other forms of donation. The difference between means is considerable (-1.50 for bequest estimates versus -1.18 for other forms of donation), and the multivariate regression finds that the form of donation is a significant variable affecting price elasticity at the .05 level ($p = .043$). Thus, H_6 is supported.

Donor Income Level

From Table 2, Panel B, the price elasticities of higher-income donors ($\$100,000+$ annual income) appear to be slightly greater than those of lower-income donors ($-.91$ for lower-income donors versus -1.09 for higher-income donors). However, this result is not statistically significant ($p = .825$). Thus, H_7 is supported.

Itemizer Status

The elasticities of itemizers versus nonitemizers appear in the last row of Table 2, Panel C. Although the analysis finds a large difference in means between the two groups (-1.05 for itemizers versus -2.99 for nonitemizers), this difference is in the direction opposite that described in H_8 . Furthermore, the model fails to provide support for a significant relationship ($p = .650$). This may again be due to the relatively small number of usable observations recording price elasticities for nonitemizers ($k = 6$). Thus, H_8 is not supported.

Note that the results examining the effects of both donor income and itemizer status suffer from a relatively low sample size and therefore may be more important to the price elasticity of charitable donation than suggested by the data we present here. One final data characteristic we examined was the effect of tax changes on charitable giving over time. Although we did not develop a specific hypothesis, we regressed the elasticity estimates on both year of publication and year of data collection to detect possible changes in elasticities over significant periods of time, such as the tax cuts experienced in the United States during the Reagan administration. We did not find any significant results.

Discussion

In general, our results support the hypothesis that tax deductions for charitable giving are treasury efficient. That is, on average, a decrease in \$1 in the cost of giving can be expected to result in more than \$1 being donated to charity through personal philanthropy. However, the treasury effi-

ciency of charitable donations is only one issue for consideration, albeit an important one. Previous researchers have examined the benefits of replacing government support for charities with individual support. For example, Cordes (2001, p. 3) notes the correlation between cash donations and volunteerism and argues that a system encouraging more individual donations would also “help foster civic virtues that are needed to maintain a ‘civil society.’” Others have argued that charity is supported most efficiently through private donations and that encouraging individual donations allows for consumer choice (Brooks 2004). The current analysis highlighted several issues in the study of the effects of tax on individual charitable giving.

To begin, we find that several issues previously thought to be significant in the estimation of the price elasticity of giving are relatively insignificant. For example, although many researchers attempt to compute measures of permanent tax costs (i.e., deductibility) to estimate price elasticity of charitable donations, the differences in estimates between models that use permanent and short-term measures are insignificant. For policy makers, this is perhaps the most important implication from the analysis. Although the mean value of price elasticities measured with longer-term measures of tax costs is lower, overall, tax deductions appear to be treasury efficient. Furthermore, this effect presents a potential marketing opportunity for charitable organizations. For example, perhaps the changes are not communicated efficiently through government organizations, thus providing an opportunity for charities to increase awareness about changes in the tax deductibility of donations and create a sense of urgency. Although many charities may be reluctant to market such egoistic motives to consumers, the current study suggests that such motivations are important to consumers and therefore could represent a potential increase in donations for charities.

Similarly, the use of panel data does not appear to have any marked effect on elasticity estimates despite their increased usage over the past two decades. This has important implications because cross-sectional data are often easier for researchers to access and analyze.

An examination of the elasticities based on tax-filer data and survey data indicates that consumers appear to overestimate the effects of changes in tax deductibility on their willingness to increase donations, as shown by the analysis for H_3 . This is consistent with the social desirability hypothesis, but it might also be influenced by consumers being simply more aware of tax advantages of charitable giving in survey situations. Indeed, we show that elasticities in giving situations in which tax costs are expected to be salient, such as a bequest, are significant. This finding also represents a potential advantage to researchers studying the effects of tax deductibility of charitable donations. Survey data are often considered less accurate, though typically easier to access. Researchers using survey data can assess expected actual effects in tax returns by correcting for the difference found in this analysis. On average, survey data reports elasticities that are approximately 20% greater than those found in tax-filer samples.

Finally, higher-income consumers do not appear to be significantly more or less price elastic than lower-income consumers. This has implications for the marketers of char-

ities that perhaps incorrectly assume that higher-income donors will be more concerned with tax advantages. Lankford and Wyckoff (1991) find that price elasticities decline in higher-income groups, and Boskin and Feldstein (1977) find significant, negative price elasticities in lower-income groups greater than two in absolute value. Therefore, potential tax advantages of charitable donations should not be promoted solely to higher-income donors.

There are several limitations to the current study. First, the effects of changes in tax deductibility are estimated at given tax rates. This effect is relative, not absolute, and thus it can be expected to vary depending on the actual cost of giving. For example, a decrease of 10% in the cost of giving from .5 to .45 can be expected to have a significant effect. Conversely, a decrease of 10% in the cost of giving from .2 to .18 may not have a similar effect. Although the current study found no significant differences in elasticities estimated across periods of fluctuating tax rates (e.g., the lower taxes associated with the Reagan era of the 1980s), more examination of this possibility is required. This issue would benefit from more specific study, perhaps under experimental conditions that would allow researchers an easier way to manipulate the levels of taxation.

Second, we did not examine the effect of tax deductibility on donations to specific types of charities, though Feldstein (1975b) shows that price elasticities vary among the type of charitable organization. Similarly, other researchers have found that specific charities maintain support better than others through periods of financial challenge (Smith 1980). Therefore, although this analysis presents an overall estimate of the phenomenon, specific charities may not achieve the benefits we presented here.

Third, more complete reporting would lead to increased ability to meta-analyze the field. For example, some studies did not report sample sizes, and therefore those estimates required us to include substitute values of sample size in this study. In addition, the use of correlational data would provide a more robust analysis of the effects of tax deductibility on charitable contributions. Most studies provide no correlational data (cf. Robinson 1990).

Further Research

Related to the limitations of this meta-analysis, there are two areas in which gaps exist in the extant literature, and these represent future research opportunities in the area of tax elasticities of charitable contributions: (1) The current research base is focused on the United States, and (2) it has several measurement issues; we discuss each of these issues in turn.

First, the current study includes almost exclusively samples from the U.S. population. More research is needed with non-U.S. sample populations to understand the effects of tax deductibility in emerging economies. The United States has a rich history of charity, and the majority of Americans donate to charitable organizations (Sullivan 2002). Clotfelter (1985, p. 1) states that “[the United States] is distinctive to the degree to which it subsidizes nonprofits.” As we show in Table 1, several studies have recently begun to explore the phenomenon outside the United States, including Canada, the United Kingdom, Russia, and Singapore. Emerging

economies, such as Russia and Singapore, are perhaps more interesting to study, given the comparative similarities among Canada, the United Kingdom, and the United States. Indeed, the few estimates that are available from these emerging cultures show significantly higher elasticities than those found in other Western cultures. Additional study is necessary to confirm these estimates and to uncover the moderator variables that lead to such extreme values.

A second gap identified by the meta-analysis is the type of donations studied and their measurement. For example, the effects of tax evasion have only marginally been addressed (Clotfelter 1983; Slemrod 1989). Although the current study finds no statistical difference in audited tax data, the relatively small quantity of estimates using this type of data point to an important gap in the literature. Furthermore, use of audited data would shed light on the issue of nonitemizers' price elasticities. Such research would be invaluable in the discussion about flat tax proposals and could potentially alleviate charitable organizations' concerns that such a tax structure would result in dramatically lower levels of public support. Similarly, the findings we present for the price elasticities of nonitemizers lack theoretical support. A potential explanation is found in the U.S. Treasury Department (1984) report on the Economic Recovery Tax Act from 1982 to 1986; the authors of the report note the "enforcement problem" created by the nonitemizers' deductions. Indeed, none of the tax-filer data used in nonitemizers' estimates is audited data, creating a possible inflation in elasticity due to fraudulent claims.

As we noted previously, given the relatively low number of observations, the analysis we present for the potential moderators of donor income and itemizer status is perhaps less conclusive than the analysis for other moderator variables. Further research should extend the work of previous researchers in these areas, particularly donor income.

A final gap related to the type of donation is the paucity of research examining donations in nontraditional form. Although the majority of researchers have examined traditional charitable donations in their analyses, the demographics of the North American population suggest that charities can expect an increase in the prominence of planned giving among their donors, illustrating the need to further study the effects of tax deductibility on, for example, bequests. In addition, other emerging forms of charitable donation, such as fundraising events, blend the ideas of purchase and donation. For example, tickets to charity events are often only partially tax deductible because the donor receives some value in return for the ticket price. Further research must consider these emerging forms of donation to understand how tax costs affect consumer behavior.

Conclusion

The effect of changes in tax deductibility has been one of the most widely studied areas in personal philanthropy. However, although the field has progressed significantly from Taussig's (1967) original estimates, there remains little consensus on the proper means of estimating elasticities, and there is serious debate about the effectiveness of changes in tax deductibility to provide a stimulus for increased charitable giving. The current analysis includes approximately 40

years of research and concludes that changes in tax deductibility indeed appear to have a marked effect on charitable giving. Our results suggest that tax deductions are treasury efficient; that is, a decrease in the cost of giving by \$1 results in more than \$1 being donated to charity through private philanthropy. This presents an opportunity for policy makers to support the transition of the provision of public services from governments to charities and nonprofit organizations. In addition, charities must ensure that the egoistic benefit of tax deductibility is present in their charitable appeals and that their donor bases are aware of decreases in the tax cost of giving.

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