CHARITABLE CONTRIBUTIONS TO INTERNATIONAL RELIEF AND DEVELOPMENT

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Abstract:
This paper uses 1988-1991 state-level data to examine the effects of tax policy, income, and sociopolitical characteristics on charitable contributions to international relief and development. Unlike assistance to domestic religious, educational, cultural, health, and social welfare institutions, donations to organizations that primarily benefit foreigners provide no direct consumption value to the donor and are not subject to crowding-out by state and local governments. The paper finds that this type of charitable giving is sensitive to changes in both income and tax rates. The educational composition, age distribution, religiousness, and political orientation of each state are also important determinants of donative behavior.

Article:

INTRODUCTION

In the past 20 years, economists have devoted considerable effort to investigating the determinants of private charitable giving. Research interest in charitable behavior stems from several sources. First, total annual contributions to charitable organizations represent a sizeable amount. Individuals donated $103 billion or roughly 1.8 percent of GNP in 1991 (Kaplan, 1992). Second, from a methodological perspective, evidence on charitable behavior informs the development of theoretical economic models of public goods provision and altruism. Third, there is interest in the effects of tax policy on donative behavior. Private charitable giving, which cost the federal government $15.7 billion in 1991 (U.S. Office of Management and Budget, 1992), is thought to be sensitive to tax policy. Indeed, previous studies have generally reported price elasticities in the range of —1.0 to —1.5 (Clotfelter, 1985, 1990). Unfortunately, unresolved statistical issues exist in much of this literature, and the tax sensitivity of contributions to specific types of organizations has been only lightly researched.

This study examines the effects of interstate variation in tax policy, income, demographic characteristics, and political attitudes on private giving to international relief and development organizations (IRDOs). The analysis uses 1988-91 longitudinal state-level data collected directly from eight of the largest IRDOs. These data have several advantages relative to the data used in previous analyses.

Most notably, the data describe contributions to a specific type of charity. Much of the existing empirical research on tax sensitivity relies on federal tax data on charitable deductions (e.g., Clotfelter and Steuerle, 1981; Broman, 1989; Slemrod, 1989). These studies implicitly consider a composite good comprised of gifts intended for many different uses such as religious, artistic, educational, medical, or social improvement. Giving in each of these areas may reflect different intensities of benevolence. Specifically, some donors derive direct consumption benefits from the goods and services that certain organizations provide. For example, contributors to religious institutions may benefit from worship services and the services of clergy; contributors to artistic organizations may attend exhibitions and performances. In each of these cases, donors could be modeled as having preferences over the consumption of some set of local public goods. Alternatively, donors may receive no immediate consumption benefits from the organizations they support but may, instead, be motivated by the possibility of future needs and benefits. Gifts to medical research, volunteer fire departments, and social welfare

organizations may be influenced by such insurance considerations. A third motivation might be the satisfaction that individuals derive from the act of gift- giving or more specifically from the social approval associated with gift-giving. Finally, individuals may behave in a purely altruistic manner—i.e., the utility of other individuals may enter donors' own utility functions as public goods. Contributions to a particular charity may depend on several motives. For example, Andreoni (1990) combines interdependent utility and joy-of-giving motivations in his model of "impure altruism."

To the extent that composite giving reflects a mixture of all of the forgoing motives, estimates based on tax records or broadly aggregated donations reveal little about the demand parameters associated with particular motives. In contrast, IRDOs provide virtually no assistance to U.S. residents; hence, contributions to these organizations should not be influenced by consumption or insurance motives. Thus, this paper examines gifts that are motivated by either a pure or impure model of altruism.

Disaggregating contributions to IRDOs by state confers additional advantages. The use of longitudinal cross-section state data allows us to introduce variation in state tax rates and, consequently, variation in the effective price of charity. Unlike many previous studies that relied solely on cross-section variation in federal tax rates, our tax price measures incorporate a source of variation that is independent of the variation in income and should yield robust estimates of the tax sensitivity of charitable giving. Additionally, because state governments do not provide assistance to foreign countries, the cross-section data reduce the difficulties in controlling for possible government crowd-out effects.

Finally, the data are contemporary and may be more accurate than the information used in previous analyses. The paper's observations are calculated directly from the computerized donor databases of the participating IRDOs. Unlike tax records, these data include contributions from both itemizers and nonitemizers. Because the data are obtained from administrative records, they are not subject to recall error. Furthermore, there are no financial, social, or psychological incentives to over-report contributions, as might exist with tax or survey data.[1]

This study finds that giving to IRDOs is generally sensitive to changes in tax rates and incomes, with estimates of absolute elasticities exceeding 1.5 in many specifications. The results are robust to different definitions of the tax price variable, alternative functional specifications, and the inclusion of demographic, ideological, and regional controls. The results hold in separate years and for most of the individual organizations. The finding of elastic price and income responses is consistent with the interpretation of contributions to IRDOs as representing acts of either pure or impure benevolence.

The paper is organized as follows. The next section reviews the previous empirical research on charitable behavior. The econometric methodology and data are described in the third section. The fourth section reports and interprets the econometric results. Concluding remarks appear in the final section.

PREVIOUS RESEARCH

The empirical research on private charitable giving has been extensively reviewed by Clotfelter (1985, 1990) and is only briefly summarized here. Most studies have examined composite contributions aggregated across a variety of charitable activities. Although there have been some exceptions, the majority of these analyses have found contributions to be moderately price elastic.[2] In contrast, these same studies have almost universally concluded that contributions are inelastic with respect to income.

To our knowledge, no empirical economic study has focused on gifts motivated exclusively by either pure or impure altruism, and only two have explicitly considered social welfare donations. In separate analyses using very different data sets and methods, Feldstein (1975) and Reece (1979) found that private contributions to social welfare organizations were moderately sensitive to changes in prices and incomes.[3] Although carefully done, the results of both studies (and much of the contributions literature) may be compromised by two statistical issues related to their use of cross-section variation in the federal tax rate to generate price variation.

First, there may be a problem in the identification of price effects. The use of differences in the federal tax rate, which are driven primarily by variations in income, to identify price effects implicitly requires a functional restriction on income. In light of this, Feenberg (1987) has suggested using variation in local tax rates to identify price effects.[4]

Second, estimates of the price elasticity of contributions directed toward the provision of a public good may be biased toward zero if similarly directed government expenditures increase taxes and crowd out private contributions. In theory, crowd-out bias can be corrected by including both the tax price and the appropriate category of government spending as regressors. Unfortunately, a practical problem arises in defining the relevant component of government spending.[5] In macro-level analyses, correction becomes even more difficult as government expenditures may no longer be exogenous.

Kingma's (1989) analysis of contributions to a narrowly defined public good, National Public Radio (NPR), provides one model of how the issues of identification and crowding-out might be addressed. In his study, price effects were identified through cross-section variation in state tax rates; government funding of NPR provided an appropriate measure of crowd-out. Kingma found a small and statistically insignificant price elasticity.

This paper offers a slightly different empirical strategy. Like Kingma, we consider donations to a particular activity, international relief and development, and incorporate variation in state tax rates as a price control. However, because state governments do not engage in foreign assistance, our measure of charitable giving is unaffected by crowding-out at the local level. A series of time dummies suffices to control for year-to-year differences in federal development assistance.

THE MODEL AND DATA

Charitable giving is modeled as isoelastic with respect to prices and income and linear in the other explanatory variables. Specifically, per capita contributions to IRDOs in state j for year t, g_{jt}, are assumed to follow

$$\ln(g_{jt}) = \beta_p \ln(p_{jt}) + \beta_y \ln(y_{jt}) + \beta_0' X_{jt} + \epsilon_{jt} \quad (1)$$

where p_{it} is the tax price, y_{jt} is per capita disposable income, X_{jt} is a vector of other explanatory variables, and ε_{jt} represents unobserved variation. The paper first examines standard OLS estimates of the parameters in equation 1. OLS is consistent if ε_{jt} is independent of the observed variables and efficient if fit is homoskedastic and serially uncorrelated. The robustness of the OLS estimates to alternative functional specifications and error assumptions is subsequently examined.

The paper's contributions data were collected directly through a survey of IRDOs. Ten organizations were contacted; none refused our request for information, and eight provided usable data.[6] Each of the surveyed IRDOs maintains a database of donors, their contributions, and addresses, making a breakdown of gifts by state possible. The organizations drew individual cash contributions information from their databases, summed the data by state and year, and provided us with the aggregated results.

Several of the organizations have requested anonymity. To facilitate discussion where there is a need to describe a particular organization, the IRDOs have been randomly assigned the letters A through H. Overall, the organizations can be characterized as follows. Each organization operates foreign assistance programs in the tens of millions of dollars. Each uses a large majority of its program resources for foreign, rather than domestic, programs.[7] Each enjoys widespread name recognition and is strongly associated with international relief and development. The organizations include secular, religiously oriented, and denominationally affiliated charities. Private cash contributions to the eight organizations in the sample totaled $370 million in 1990.

While our contributions data possess advantages relative to the data used in earlier studies, they also have some limitations. First, the data do not include in- kind contributions. However, this may not be a severe problem because the surveyed organizations received most of their donations in the form of cash.[8] Second, although some organizations provided complete records for the entire period 1988-91, others were only able to report data for two or three years. Specifically, data for the years 1988, 1989, 1990, and 1991 are available from four, seven, eight, and six organizations, respectively. Most of the results reported in this paper are based on in-formation from the two-year period 1989-90 for which seven organizations provided complete data. Finally, some contributions could not be assigned to a particular state (i.e., contributions from overseas military personnel, residents of the U.S. territories, and nonresidents generally). The data we were able to collect represent, on average, 89 percent of the individual contributions listed in the organizations' annual reports.

The independent variables are developed from standard sources. State and federal tax provisions are used to determine the effective price of charity (Advisory Commission on Intergovernmental Relations 1989-92 and various state personal income tax forms). The price measure accounts for the federal deductibility of charitable contributions and state taxes. Several states, in turn, also allow taxpayers to deduct contributions or federal taxes from their state payments. In general, the tax price of charity can be expressed

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$$p_{jt} = 1 - \frac{(1 - i_{jt}s_{jt})f_t + (i_{jt} - f_t d_{jt})s_{jt}}{1 - s_{jt}d_{jt}f_t}$$

where f_t is the federal marginal tax rate, s_{jt} is the state marginal rate i_{jt} equals one if the state permits itemized deduction of charitable contributions and equals zero otherwise, and d_{jt} is the fraction of federal taxes the state permits as a deduction.[9]

Because the analysis examines aggregate state-level data, there is no clear choice regarding exactly which marginal tax rates should be used. Therefore, equation 1 is estimated under several alternative specifications of p_{jt}. The baseline specification selects s_{jt} as the rate for married-joint filers at a taxable income equal to state j's average federal taxable income in year t. [10] Complete details of the construction of the sit appear in Appendix A.[11]

To determine the sensitivity of the paper's estimates to potential problems in the baseline calculation, three other specifications of p_{jt} are examined. First, the state tax rates are purged of cross- state income variation by selecting s_{it} as the marginal rate at the national average family income. This procedure eliminates possible "last dollar" endogeneity bias (Reece and Zieschang, 1985) but may also decrease the efficiency of the price estimate. A second price measure is formed using the states' maximum tax rates. This measure is also independent of cross-state income variation and might better reflect the tax price for individuals near the top of the income distribution than the other two "average" income measures.[12] Finally, the itemization rule $i_{jt,\,is}$ itself used as a proxy for the price of charity.

The other independent variables collected for each state include the per capita disposable income (U.S. Bureau of Economic Analysis, 1994), percentage of the population of African descent (U.S. Bureau of the Census, 1988), percentage with a college degree (U.S. Bureau of the Census, 1991, 1992), percentage over age 65 (U.S. Bureau of the Census, 1988), percentage who are church members (Bradley et a/., 1992), and a political index summarizing the voting records of the state's Congressional delegation (Americans for Democratic Action, 1989-92). The disposable income variable has an obvious economic interpretation. The other measures are used as controls for cross-state differences in institutions, preferences, and resources. For example, education is a proxy for both permanent income and an increased awareness of international needs; the church membership variable may capture the effects of either generosity or competing charitable demands (Independent Sector, 1990). All of these measures are available longitudinally with the exception of church membership, which is only reported for 1990.

Summary statistics for the independent variables and for total contributions to the seven charities that supplied complete 1989-90 data appear in Table 1. Table 1 lists means and standard deviations for all of the variables as well as correlations between the independent and dependent variables. The data have been weighted to reflect the relative populations of the states. All dollar amounts in the table and subsequent regressions have been deflated to 1987 levels using the implicit GNP price deflator for personal consumption expenditures. To provide more detail on the primary variables of interest, a state-bystate listing of total contributions, disposable incomes, and tax prices for 1990 appears in Table 2.

The descriptive data reveal that aggregate annual per capita giving to the surveyed IRDOs averaged roughly one dollar ($0.99 in 1989-90 data for seven organizations, $1.10 in the 1990 data for all eight organizations) with substantial variation across states. The average tax prices of a one-dollar contribution calculated using the baseline, national average income, and maximum tax rate methods were $0.82, $0.70, and $0.64, respectively. Charitable contributions were deductible in nearly two-thirds of the states containing 55 percent of the U.S. population. Overall, tax prices varied within a narrow band across states and were negatively correlated with charita-

TABLE 1
DESCRIPTIVE STATISTICS, 1989–1990 DATA

Variable	Mean (Standard Deviation)	Correlation with Aggregate *Per Capita* Contributions
Aggregate *per capita* charitable contributions	0.986 (0.404)	—
Per capita disposable income[a]	14.034 (1.866)	0.752
Tax price computed at state's average per taxpayer federal taxable income	0.823 (0.026)	−0.131
Tax price computed at national average of family income	0.695 (0.024)	−0.241
Tax price computed at state's maximum tax rate	0.644 (0.025)	−0.358
State permits deductions for charitable contributions (=1 if yes)	0.551 (0.500)	0.143
Percent of population of African origin	0.124 (0.081)	−0.157
Percent of population with college degree	0.207 (0.039)	0.763
Percent of population over age 65	0.126 (0.021)	−0.101
Percent of population who are church members	0.222 (0.118)	−0.660
A.D.A. ranking of state's Congressional delegation	0.489 (0.151)	0.604
Observations	102	

Note: Aggregate contributions figure includes giving to seven of the eight organizations (organization E did not report contributions for 1989). Observations are weighted for each state's population (and standardized to sum to 102).
[a]Income reported in $1,000.

TABLE 2
AGGREGATE CONTRIBUTIONS, DISPOSABLE INCOMES, AND TAX PRICES BY STATE, 1990

State	Aggregate Contri-butions	Disposable Income	Tax Price	Contrib. Deduct-ible	State	Aggregate Contri-butions	Disposable Income	Tax Price	Contrib. Deduct-ible
Alabama	0.56	11,532	0.81	yes	Montana	0.77	11,189	0.79	yes
Alaska	1.44	16,001	0.85	no	Nebraska	0.73	13,374	0.82	yes
Arizona	0.85	12,500	0.81	yes	Nevada	0.97	15,330	0.85	no
Arkansas	0.43	10,668	0.80	yes	New Ham.	1.13	15,798	0.85	no
California	1.76	15,423	0.82	yes	New Jersey	1.70	18,180	0.85	no
Colorado	1.72	14,151	0.81	yes	New Mex.	0.83	11,035	0.81	yes
Connecticut	1.67	18,835	0.85	no	New York	1.46	16,332	0.78	yes
Delaware	1.03	14,424	0.79	yes	N. Carolina	0.70	12,418	0.80	yes
Dist. Col.	4.31	17,709	0.77	yes	N. Dakota	0.81	12,063	0.79	yes
Florida	0.91	14,416	0.85	no	Ohio	0.72	13,293	0.85	no
Georgia	0.58	12,983	0.80	yes	Oklahoma	0.50	11,587	0.80	yes
Hawaii	0.99	15,425	0.78	yes	Oregon	1.46	12,825	0.78	yes
Idaho	0.76	12,064	0.78	yes	Penn.	1.11	14,313	0.85	no
Illinois	1.12	15,180	0.85	no	R. Island	2.27	14,447	0.82	yes
Indiana	0.75	12,760	0.85	no	S. Carolina	0.64	11,619	0.79	yes
Iowa	0.75	12,656	0.80	yes	S. Dakota	0.65	12,310	0.85	no
Kansas	0.84	13,302	0.82	yes	Tennessee	0.66	12,481	0.85	no
Kentucky	0.52	11,247	0.81	yes	Texas	0.77	12,890	0.85	no
Louisiana	0.44	11,097	0.82	yes	Utah	0.30	10,599	0.79	yes
Maine	1.37	13,133	0.79	yes	Vermont	1.21	13,274	0.81	yes
Maryland	1.97	16,303	0.79	yes	Virginia	1.09	14,722	0.80	yes
Mass.	1.51	16,501	0.85	no	Washington	1.39	14,726	0.85	no
Michigan	1.01	13,808	0.85	no	W. Va.	0.42	10,880	0.85	no
Minnesota	1.36	13,941	0.78	yes	Wisconsin	0.96	13,119	0.81	yes
Mississippi	0.34	10,018	0.81	yes	Wyoming	0.71	13,177	0.85	no
Missouri	0.75	13,292	0.81	yes					

Note: Aggregate contributions figure includes giving to all eight organizations in 1990. Tax prices computed at each state's average per taxpayer federal taxable income.

ble giving. Turning to the other independent variables, per capita disposable income, education, and liberal ideology were positively correlated with contributions, while African origin, older populations, and church membership were negatively associated with giving to IRDOs. In general, the results for these other variables conform with expectations.

RESULTS

Table 3 reports estimates from four specifications of equation 1 using data from organizations that reported data for both 1989 and 1990. The first column lists estimates from a simple OLS regression that includes disposable income, the baseline tax price, and a time dummy as independent variables. The results indicate that these few variables explain a large proportion of the total variation in charitable giving. Contributions in this specification appear to be very sensitive to income and tax price changes. However, the time dummy, which is included to capture effects of annual changes in international and domestic conditions as well as potential federal crowd-out effects, is insignificant. Although evidence based on a single time dummy is hardly compelling, the coefficient is consistent with findings of weak crowd-out effects reported by Abrams and Schmitz (1984) and Clotfelter (1985).

The next specification in Table 3 introduces demographic, religious, and ideological variables as controls for variation in tastes and preferences. The added variables are jointly significant. Donations appear to be larger in states with more

TABLE 3
OLS AND RANDOM EFFECTS AGGREGATE CONTRIBUTIONS REGRESSION RESULTS 1989–1990

Independent Variables	OLS without Controls	OLS with Sociopolitical Controls	OLS with Sociopolitical and Regional Controls	Random Effects with Sociopolitical Controls
Intercept	−25.800[c]	−16.732[c]	−17.339[c]	−15.371[c]
	(1.638)	(3.204)	(3.822)	(3.378)
Log *per capita* disposable income	2.654[c]	1.676[c]	1.723[c]	1.547[c]
	(0.170)	(0.354)	(0.414)	(0.357)
Log tax price[a]	−1.997[c]	−1.277[e]	−0.939	−1.707[e]
	(0.713)	(0.720)	(0.860)	(0.980)
Percentage of population of African origin	—	−0.654[d]	−0.547	−0.428
		(0.313)	(0.365)	(0.460)
Percentage of population with college degree	—	2.246[d]	2.532[d]	0.670
		(1.025)	(1.217)	(0.651)
Percentage of population over age 65	—	−0.988	0.997	0.245
		(1.155)	(1.339)	(1.395)
Percentage of population who are church members	—	−0.267	0.238	−0.725[e]
		(0.297)	(0.383)	(0.426)
A.D.A. ranking of state's Congressional delegation	—	0.384[d]	0.458[d]	0.461[c]
		(0.178)	(0.195)	(0.168)
1990 dummy	−0.012	0.010	0.008	−0.005
	(0.045)	(0.041)	(0.038)	(0.011)
Region dummies[b]	no	no	yes	no
R^2	0.715	0.785	0.834	—
Observations	102			

Note: Dependent variable is log of aggregate contributions; aggregate includes every organization but E. Observations are weighted for each state's population. Standard errors appear in parentheses.
[a]Tax prices computed at each state's average per taxpayer federal taxable income.
[b]Regions are the nine census divisions: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific.
[c]Significant at 0.01 level.
[d]Significant at 0.05 level.
[e]Significant at 0.10 level.

educated and politically liberal residents than other states and lower in states with larger proportions of black residents. Church membership and the state's age distribution do not appear to be significant determinants. Adding the preference shifters causes the magnitudes of the income and price coefficients to diminish by about one-third. The absolute values of both elasticity point estimates are still greater than one; however, neither is significantly different from one. The coefficient on the time dummy remains small and insignificant.

The third column lists results from a model that appends regional dummy variables to the list of controls. The region dummies capture effects of time- invariant differences in preferences and institutions not picked up by the other taste shifters. Although the added variables are jointly and individually significant, their inclusion has only modest effects on the other coefficients. Specifically, the coefficients on income, college education, and political attitudes maintain their magnitudes, signs, and levels of significance. The tax price and racial composition coefficients lose their significance (the price elasticity actually dips below one) but remain close to their previous values.

The final specification in Table 3 takes advantage of the longitudinal aspects of the data and replaces the region dummies with state-specific random effects. The random effects procedure controls for omitted time-invariant factors that are orthogonal to the other independent variables. If this type of unobserved state-specific heterogeneity is present, the procedure should increase the efficiency of the estimates relative to OLS and generate more appropriate standard errors.[13] The income and political ideology coefficients are essentially unchanged in the random effects specification. The coefficient on tax price increases in magnitude and regains its significance. The coefficient on church membership also becomes significantly negative, while the coefficient on college education loses its significance. Examining the results from Table 3 as a whole, the estimated income elasticity is significant and 1.5 or higher in all four specifications; the price elasticity is significant and less than —1.0 in three specifications.[14]

In the next table, the regressions from Table 3 are all reestimated using the three alternative tax price measures discussed in the previous section. Because the respecifications had no substantial effects on the results for the

sociopolitical controls, Table 4 reports only the coefficients for the income and price variables. For the specifications in the first two rows, the economic coefficients are similar in sign, significance, and magnitude to the estimates from Table 3 and do not to be appear sensitive to the choice of tax rate in the price calculations. If anything, both sets of respecifications lead to slightly stronger price elasticities. The regressions in the last row of Table 4 each replace the tax price with a dummy variable indicating whether the state allows deductions for itemized contributions. Although the dummy variable coefficients are not directly comparable with the other price coefficients, the pattern of estimates is consistent with our previous results.[15]

So far, the analysis has only examined a particular aggregation of the charitable expenditures data over a particular two- year period. The next two tables consider different definitions of the contributions variable as well as data from different years. Estimates based on alternative aggregation schemes appear in Table 5. The first four rows of Table 5 list results from random effects models, which aggregate the contributions data to produce consistent groupings across different time spans. Estimates from OLS models, which aggregate all of the available data for single years, appear in the next four rows of Table 5.[16] To facilitate comparison, the table lists the average level of per capita aggregate charitable expenditures under each scheme.

The estimates in the first row of Table 5 describe the determinants of aggregate giving for the years 1988-91. Data over this period are available for only three IRDOs. However, contributions to these organizations account for nearly 70 percent of the previous (1989-90) aggregate. Estimation reveals some differences between these and our earlier results. The estimated income elasticity from the 1988-91 data is significantly positive, though smaller than the estimates from the other tables. The estimated price elasticity is insignificant but nearly the same as the corresponding estimate from Table 3. Among the sociopolitical variables, church membership again has a significant negative effect on contributions, and political ideology maintains its significant positive effect. The coefficient on elderly residents becomes significantly positive, while the other demographic variables remain insignificant. Lastly, the time dummies are found to be jointly significant.

The next three rows present regression results for the years 1988-90, 1989-91,

TABLE 4
OLS AND RANDOM EFFECTS AGGREGATE CONTRIBUTIONS REGRESSION RESULTS 1989–1990, ALTERNATIVE PRICE MEASURES

Independent Variables	OLS without Controls	OLS with Sociopolitical Controls	OLS with Sociopolitical and Regional Controls	Random Effects with Sociopolitical Controls
Log *per capita* disposable income	2.642[a]	1.814[a]	1.811[a]	1.618[a]
	(0.162)	(0.347)	(0.412)	(0.352)
Log tax price computed at national average income	−2.625[a]	−1.850[a]	−1.308	−2.152[b]
	(0.630)	(0.657)	(0.814)	(0.911)
R^2	0.739	0.796	0.837	—
Log *per capita* disposable income	2.591[a]	1.913[a]	1.827[a]	1.658[a]
	(0.153)	(0.335)	(0.406)	(0.347)
Log tax price computed at maximum state tax rate	−2.835[a]	−2.133[a]	−1.365[c]	−2.167[a]
	(0.519)	(0.561)	(0.748)	(0.749)
R^2	0.764	0.808	0.838	—
Log *per capita* disposable income	2.713[a]	1.813[a]	1.751[a]	1.616[a]
	(0.166)	(0.353)	(0.415)	(0.356)
State permits deductions for char. contributions (dummy)	0.167[a]	0.119[b]	0.069	0.148[b]
	(0.044)	(0.046)	(0.056)	(0.064)
R^2	0.731	0.793	0.834	—
Observations		102		

Note: See notes for Table 2.
[a]Significant at 0.01 level.
[b]Significant at 0.05 level.
[c]Significant at 0.10 level.

and 1990-1; the dependent variables for these regressions represent contributions to four, five, and six IRDOs, respectively. Each specification produces significantly positive income elasticities, with two of three point

estimates exceeding 1.0. Two of the specifications generate strong and significantly negative price elasticities. These same two specifications (1989-91 and 1990-1) also contain significant time dummies. Although there are some changes in magnitudes and significance levels, the estimated sociopolitical effects are mostly consistent with the results presented earlier.

Results for aggregate contributions for the individual years 1988-91 appear in the last four rows of Table 5. The estimated income elasticities in these specifications are all significant and greater than 1.5. The price elasticities are all larger in magnitude than the corresponding estimate from Table 3; however, only one coefficient is significantly negative. The coefficients on college education and political ideology are significant in two equations each, while the other demographic controls are all insignificant.

Separate random effects regression results for the individual IRDOs appear in Table 6.[17] Organization identifiers and figures describing the data availability and average annual per capita contributions for each IRDO are listed in the first three columns. The estimation results in the next column indicate that income has significant positive effects on contributions for six of the eight IRDOs (insignificant or negative effects appear only for the two denominationally affiliated organizations). Elastic income responses appear for four of the organizations. The price coefficients are negative for six of

TABLE 5
OLS AND RANDOM EFFECTS AGGREGATE CONTRIBUTION REGRESSION RESULTS—ALTERNATIVE YEARS

Years of Data	Included Charities	Mean *per capita* Contribution	Independent Variables						
			Income	Tax Price[a]	African Origin	College	Over 65	Church Members	A.D.A.
1988–91[b]	A, B, H	0.67	0.723[e] (0.291)	−1.570 (0.955)	−0.083 (0.522)	0.324 (0.300)	3.302[d] (1.226)	−2.229[d] (0.440)	0.377[d] (0.109)
1988–90[b]	A, B, G, H	0.75	1.114[d] (0.331)	−1.436 (0.968)	−0.287 (0.511)	0.819[e] (0.383)	1.229 (1.565)	−1.676[d] (0.455)	0.517[d] (0.131)
1989–91[b]	A, B, D, F, H	0.81	0.874[d] (0.312)	−2.198[e] (0.991)	0.249 (0.475)	0.721 (0.475)	3.372[d] (1.144)	−1.642[d] (0.419)	0.311[e] (0.130)
1990–1[b]	A, B, D, E, F, H	0.92	1.653[d] (0.345)	−2.592[d] (0.938)	0.018 (0.434)	1.094[f] (0.658)	1.432 (1.219)	−1.227[d] (0.397)	0.231 (0.152)
1988[c]	A, B, G, H	0.75	1.710[d] (0.515)	−1.668 (1.241)	−0.954 (0.580)	1.896[f] (1.104)	2.088 (2.151)	−0.445 (0.613)	0.729[e] (0.275)
1989[c]	A, B, C, D, F, G, H	0.98	1.585[e] (0.634)	−1.171 (1.332)	−0.741 (0.584)	2.325 (1.808)	0.270 (2.199)	0.278 (0.616)	0.521[f] (0.297)
1990[c]	A, B, C, D, E, F, G, H	1.10	1.838[d] (0.632)	−0.945 (1.235)	−0.361 (0.497)	3.580[f] (2.043)	1.498 (1.845)	0.139 (0.523)	0.340 (0.293)
1991[c]	A, B, D, E, F, H	0.94	2.652[d] (0.612)	−2.848[e] (1.252)	−0.127 (0.524)	0.476 (1.538)	1.756 (1.630)	−0.272 (0.552)	0.200 (0.276)

Note: Dependent variable is log of aggregate contributions. Observations are weighted for each state's population. Standard errors appear in parentheses.
[a] Tax prices computed at each state's average per taxpayer federal taxable income.
[b] Estimates based on random effects regressions. Intercepts and year dummy variables are included but not reported.
[c] Estimates based on OLS regressions. Intercepts and regional dummy variables are included but not reported.
[d] Significant at 0.01 level.
[e] Significant at 0.05 level.
[f] Significant at 0.10 level.

the IRDOs and significantly negative for three. Each of the significant coefficients indicates an elastic price response. Some variation appears in the estimated demographic and attitudinal parameters across organizations. However, the significant coefficients are all consistent in sign with the estimates from previous tables.

Conclusions

This study investigates the effects of tax policy, incomes, and sociopolitical characteristics on private giving to international relief and development organizations. Using a new data set that disaggregates contributions by state, the study finds that donations to IRDOs are sensitive to changes in incomes and tax prices. Itemization itself also appears to have a clear effect: states that permit charitable deductions contribute more to IRDOs than

states that do not permit deductions. A battery of tests indicates that the paper's income and price results are fairly robust to respecification of the variables, functional forms, time spans, and aggregation methods.

Overall, the paper reports income and price effects that are on the high end of those found by previous studies that examined general charitable contributions. Several factors might explain this result. First, unlike previous research, this study examines contributions to a narrow set of organizations, which provide neither consumption nor insurance benefits to donors. Contributions motivated by purely benevolent intentions or by preferences for gift-giving may have more of

TABLE 6
RANDOM EFFECTS REGRESSION RESULTS BY CHARITABLE ORGANIZATION

Charity	Years of Data	Mean *per capita* Contribution	Independent Variables: Income	Tax Price[a]	African Origin	College	Over 65	Church Members	A.D.A.	Denom. Members
A[b]	1988–91	0.09	0.558	−1.165	0.404	−0.012	5.089[e]	−1.830[e]	0.509	1.816[d]
			(0.776)	(2.069)	(1.001)	(1.149)	(3.002)	(0.999)	(0.372)	(0.785)
B	1988–91	0.10	1.937[c]	−2.397[c]	0.640	0.073	0.965	−2.969[d]	0.173	—
			(0.278)	(0.888)	(0.471)	(0.302)	(1.164)	(0.404)	(0.108)	
C	1989–90	0.11	0.720[e]	−0.956	−2.951[c]	−0.105	−0.848	0.246	−0.156	—
			(0.377)	(1.334)	(0.712)	(0.460)	(1.545)	(0.595)	(0.135)	
D	1989–91	0.11	2.038[c]	−0.828	0.468	1.492	3.765[e]	−0.595	0.889[c]	—
			(0.569)	(1.449)	(0.666)	(1.230)	(2.016)	(0.621)	(0.287)	
E	1990–1	0.11	2.976[c]	−2.873[d]	0.824	2.253[d]	0.169	−1.093[d]	0.515[d]	—
			(0.472)	(1.171)	(0.535)	(1.059)	(1.599)	(0.498)	(0.229)	
F[b]	1989–91	0.02	−2.003[e]	4.293	3.070	0.633	−5.367	−3.366	−0.531	21.558[c]
			(1.190)	(3.910)	(1.956)	(1.672)	(4.365)	(2.380)	(0.473)	(3.629)
G	1988–90	0.08	2.573[c]	0.325	−0.553	2.054[e]	−2.624	−0.594	0.829[d]	—
			(0.719)	(1.945)	(0.961)	(1.064)	(3.122)	(0.891)	(0.334)	
H	1988–91	0.49	0.695[d]	−2.094[d]	−0.676	0.314	2.939[d]	−1.735[c]	0.309[d]	—
			(0.327)	(1.074)	(0.588)	(0.334)	(1.374)	(0.495)	(0.122)	

Note: Observations are weighted for each state's population. Intercept and year dummy coefficients included for each regression but not reported. Standard errors appear in parentheses.
[a]Tax prices computed at each state's average per taxpayer federal taxable income.
[b]Charity associated with a particular religious denomination.
[c]Significant at 0.01 level.
[d]Significant at 0.05 level.
[e]Significant at 0.10 level.

the qualities of a luxury good than contributions motivated by less altruistic intentions. Second, the differences in findings may be explained by the inability of some earlier studies to adequately identify price effects and control for crowd- out biases. This paper's use of disaggregated data provides a sound basis for identifying price effects. In particular, cross-state variation in tax rates induces variation in the effective price of charity. Moreover, because state governments do not provide development assistance to foreign countries, this variation is not confounded by crowd- out effects.

Finally, there are several policy implications that follow from the paper's results. The high price elasticity suggests that IRDOs would benefit from an expansion of the tax deduction granted to donors and that these organizations may have been adversely affected by the tax reform of the 1980s. The strong elasticity estimates further imply that, at the margin, tax breaks reduce government revenues by less than the amount of the gifts themselves. Hence, in terms of raising funds for international relief and development, it may be more efficient to expand tax incentives than to increase direct government expenditures on assistance.

APPENDIX A
COMPUTATION OF STATE TAX RATES

This appendix describes the three alternative determinations of state tax rates. The baseline tax rates for 1989-91 are evaluated at each state's average federal taxable income. Average taxable income data are not available for 1988; consequently, the paper uses the following approximation:

Taxable income$_{j,88}$ = average adjusted gross incomej,88
— (average number of
exemptions$_{j,88}$
x exemption amount$_{88}$)
(percent itemizers$_{j,88}$
x average itemized deduction$_{j,88}$)
(percent nonitemizers$_{j,88}$
x standard deduction$_{88}$).

The averages necessary for equation A.1 are available from the Internal Revenue Service (1990-4). The second set of tax rates are those in effect at a taxable income equal to the national average family income ($38,608, $41,506, $42,652, and $43,237 in 1988, 1989, 1990, and 1991, respectively). The third set of tax rates are the maximum rates in each state. In each case, tax rates for the married-joint filing status are used. Nine states did not have special tax rates for joint filers, but did allow married taxpayers the advantage of filing separately on the same return. For these states, we select the tax rate as if all income had been earned by one spouse, rather than splitting the income between spouses.

Several states have tax policies that require special treatment. When states tax different components of income at different rates, we form an effective marginal rate equal to the weighted average of the various rates using the share of each income component in taxable income as the weight. Connecticut, Massachusetts, New Hampshire, and Tennessee require this modification. Maryland's tax rate includes the 50 percent surcharge in effect in most counties. Ohio's rate is reduced by the joint filing credit (five to 20 percent depending on income). For Kansas and Oklahoma, there are two potential rate schedules—a lower schedule that does not permit federal taxes to be deducted and a higher schedule that does permit deductions. The reported results use each state's lower schedules (the use of the higher schedules had no noticeable effect on the results). Oregon's limited deductibility for federal taxes enters into the calculation of its baseline tax price but not into its other tax prices. Finally, Wisconsin's five percent tax credit for charitable contributions is used to calculate its tax price.

ENDNOTES

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1. Comparisons of audited and unaudited tax data suggest that estimates of the price elasticity may not be much affected by misreporting (Slemrod, 1989).
2. Exceptions include the smaller price elasticities estimated from panel data (Clotfelter, 1980; Broman, 1989) and the larger elasticities estimated from the 1973 National Survey of Philanthropy (Boskin, and Feldstein, 1977; Schiff, 1990). There have also been larger (Slemrod, 1989) and smaller (Glenday, Gupta, and Pawlak, 1986) elasticities estimated from cross- section tax data. Steinberg (1990) reviewed this recent research.
3. Feldstein used 1962 federal tax data to aggregate charitable contributions by income of the donor and type of charity (i.e., religious, educational, medical, health/welfare), while Reece combined 1972-3 Consumer Expenditure Survey information on contributions that were directly deducted from paychecks with data on giving to organizations like the Red Cross and United Fund (now the United Way).
4. Bogart and Gentry (forthcoming) apply this methodology in their analysis of capital gains realizations. Alternatively, identification might be achieved through time series variation in federal tax rates.
5. Based on regressions of aggregate private giving on government welfare expenditures, Abrams and Schmitz (1984) and Clotfelter (1985) concluded that crowd-out biases were small. However, given that

private social welfare contributions represent only a fraction of total charitable giving (Kaplan, 1992), these studies considered but a portion of the potential crowd-out effect.

6. Data from one organization were not used because of its policy of returning a percentage of all donations to social welfare charities operating in the locality from which the donations originated. Another organization provided only partially disaggregated data.
7. On average, the ratio of foreign program expenditure to foreign plus domestic expenditures was 97 percent. Some well-known organizations do not satisfy this requirement. For instance, the American National Red Cross spends about $10 million in overseas programs (via the International Red Cross/Red Crescent), but this amount represents only four percent of its total program budget.
8. One charity received half of its contributions in cash, and the rest received 75 percent or more in cash. Most in-kind contributions are not from individuals but from the government (e.g., food under Public Law 480), business donations (air travel, medical supplies), and churches.
9. Let a one-dollar charitable contribution reduce federal and state taxes by F_t and S_{jt} respectively. Hence, $F_t = (1 — S_{jt})\, f_t$, and $S_{jt} = (i_{jt} — d_{jt}F_t)s_{jt}$. Using these equations to solve for S_{jt} and F_t and substituting into the equation for the tax price of giving, $p_{jt} = 1 — S_{jt} — F_t$, leads to equation 2.
10. 1° Although the number of married-joint and single filers on federal returns is nearly the same, married people make about five times more itemized charitable contributions (U.S. Internal Revenue Service, 1990-4). Similarly, the Independent Sector (1990) found the average gift of married households to be $1,132, compared to $654 for single households.
11. The baseline tax price calculation introduces several potential sources of error. First, average taxable income for state personal income taxes does not usually conform to that state's average federal taxable income. This is a minor concern as long as the error is small enough to prevent crossing a state tax bracket. Second, not all contributors itemize; hence, a weighted index in which nonitemizers have a tax price of one might be more appropriate. Unfortunately, data on the number of itemizers on state returns are not available (an index based on the percentage of federal itemizers did not substantially alter our results). Third, the use of average taxable income to arrive at a tax rate may not be appropriate if most contributions come from wealthy individuals. Finally, the tax price evaluated at taxable income represents the price of the last dollar of contributions. Although this rate is the appropriate opportunity cost of marginal contributions, it may not be strictly exogenous (Reece and Zieschang, 1985).
12. The use of the maximum rates essentially eliminates the need to choose between married-joint and single rates because, with the exception of Kansas, these rates are identical for both filing statuses (although the income level at which this rate takes effect may differ).
13. Fixed effects procedures produce consistent estimates under more general conditions than do random effects procedures. Unfortunately, our data do not contain enough longitudinal variation to generate meaningful fixed effects results—e.g., estimates (and standard errors) of the income and price coefficients from a fixed effects model similar to the fourth specification in Table 3 are 0.234 (0.702) and —0.369 (3.434), respectively. A Hausman test based on the economic coefficients rejects the random effects assumptions at a marginal significance level (p value = 0.09). Given the imprecision of the fixed effects estimates and the weak rejection of the random effects assumptions, we have chosen to report only the random effects results in the tables.
14. Reestimates of Table 3 based on unweighted state-level data produce similar estimates of income elasticities and stronger estimates of price elasticities.
15. We performed several other sensitivity analyses using the 1989-90 data. First, we reexamined the results from Tables 3 and 4 excluding possible outliers (e.g., excluding the six observations that had log contributions outside the interval —1.0 to 0.75) and found that these exclusions had no demonstrable effect on our estimates. Second, we experimented with alternative functional specifications of the regression equation, which relaxed the assumption of isoelastic price and income responses. Random effects estimates based on a fully linear model generated income and price elasticities at the observation means of 1.219 and —2.005, respectively. The corresponding elasticities from a random effects model with log dependent and linear independent variables were 1.479 and —1.679.

16. Each of the single-year OLS specifications includes sociopolitical controls and region dummies. A comparison of results with and without the regional variables reveals that the dummies' inclusion has only modest effects on the economic coefficient estimates and standard errors.
17. Two of the organizations are closely affiliated with specific religious denominations; for these groups, the fraction of denomination members in each states population is added to the standard set of demographic and attitudinal controls. While there are other religiously oriented charities among the six remaining IRDOs, none is affiliated with a particular denomination.

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