Do Tax Incentives Affect Charitable Contributions? Evidence from Public Charities' Reported Revenues

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Abstract

This paper estimates the effect of the charitable contribution income tax deduction on charities' donation revenue by exploiting the natural experiment induced by the Tax Reform Act of 1986, which changed tax incentives differentially across US states. It finds that a 1 percent increase in the tax cost of giving causes charitable receipts to fall by about 4 percent, an effect more than three times larger the consensus in the literature. The effect is stronger for some sectors, notably health charities. Consistent with the absence in changes over time in the share of GDP going to aggregate charitable contributions, the rising income share of high-income households has offset the effect of falling tax incentives on philanthropy.

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Private nonprofit organizations provide many crucial services in the US. They grant 30 percent of bachelor's degrees, make 69 percent of hospital admissions, and supply almost 100 percent of religious services. Private nonprofits make up 71 percent of museums and 89 percent of emergency shelters and soup kitchens. These organizations are supported largely by donors' gifts — in 2012, charitable giving was equal to 2.0 percent of gross domestic product.[1]

Without the nonprofit sector, many of these goods and services would likely be supplied by the government as in other countries. Instead, American governments support nonprofits indirectly by exempting them from many income and property taxes levied on for-profit firms. Additionally, organizations which serve particular causes can be registered as public charities under section 501(c)3 of the Internal Revenue Code.[2] Donations to public charities can be taken as itemized deductions on households' tax returns, reducing the donors' income tax and creating an incentive for increased giving.

This paper quantifies the effectiveness of this tax incentive, which has been subject to debate. In the philanthropic world, it has become a stylized fact that charitable giving is fixed at about two percent of gross domestic product, regardless of tax rates (Figure 1).[3] Even as the top marginal tax rate fell from 91 percent at the close of the Second World War to 28 percent in 1988 (before rising to 39.6 percent today), total contributions have indeed remained steady at roughly two percent of GDP since 1955. The implication has been that both major political parties have put forward proposals to increase tax revenue from high-income households by limiting the charitable contribution deduction, the idea being that this should increase tax revenue with little effect on nonprofits.[4] Yet, a large empirical literature has found a range of behavioral responses to tax incentives in household data. Peloza and Steel (2005) analyze 70 studies of the tax elasticity of charitable giving, and find the median paper finds that the marginal dollar not collected by the US Treasury

[1] Sources: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2013*; American Hospital Association, *AHA Hospital Statistics* (2012); Institute of Museum and Library Services, *Exhibiting Public Value: Government Funding for Museums in the United States* (2008); U.S. Bureau of the Census, National Survey of Homeless Assistance Providers and Clients (1999); Giving USA (2013); Bureau of Economic Analysis.

[2] Public charities are a subset of nonprofit organizations. Other types of nonprofit organization enjoy a wide variety of tax subsidies, such as exemption from most income and property taxes paid by for-profit firms, while only public charities and private foundations can receive tax-deductible contributions. Examples of tax-exempt nonprofit organizations that cannot accept tax-deductible contributions include social welfare groups, political organizations, homeowners' associations, and some professional sports leagues. See Hopkins (2007, §1.2-1.3).

[3] See for example the June 17 2013 *Chronicle of Philanthropy*, "The Stubborn 2% Giving Rate," or Dec. 12 2012 *Wall Street Journal* "A Christmas Wish for Charities."

[4] An Obama administration budget proposal would have limited the rate for the contribution deduction to 28 percent, so that taxpayers in the top 39.5 percent bracket would still owe 11.5 percentage points (39.5-28=11.5) to the federal government on income given to charity (April 11 2013 *New York Times*,"White House Budget Curbs Some Deductions for the Wealthy" and April 10 2013 *Chronicle of Higher Education*, "Obama Renews Effort to Limit Charitable Deduction."). A competing proposal by Republican senators would have capped all itemized contributions at two percent of income, including charitable contributions (March 12 2013 *Washington Post*, "It's time to cap tax deductions ").

yields about $1.20 in additional charitable giving, a substantial effect, and one that seemingly contradicts the stability of the giving share of GDP. But studies' estimates range from a zero effect to about seven additional dollars given per dollar of foregone tax revenue. These studies' results differ for many reasons, not least of which is a dearth of credible instruments for the after-tax cost of charitable giving. Most distinguish between income and price effects from changes in the schedule of marginal federal tax rates using panel fixed-effects models that use households at different income levels as counterfactual comparison groups for each other, a strategy that is likely to be flawed if the price parameter varies by income. In addition to challenges formulating estimation strategies, households' incentives to misreport giving leads studies using individual income tax return data to underestimate the tax sensitivity of giving (Slemrod 1989). How much the charitable contribution income tax deduction affects charitable giving therefore remains an unsettled question.

This paper provides new evidence on this question using the Tax Reform Act of 1986 (TRA86) as a natural experiment. Preexisting differences among state income tax laws interacted with the TRA86 in ways that created substantial variation in changes in the value of tax incentives for potential donors across states. These interstate changes were not foreseeable by charities, donors, or policy makers, nor were they correlated with the tax cost of giving before the federal reform, supporting the internal validity of this empirical methodology. Additionally, because these changes were driven by state-federal legal interactions, it is unlikely that other changes in the national law drove observed differences across the states.

Responses to tax incentive changes are examined using a panel of reported contributions from nonprofit organizations' Internal Revenue Service (IRS) filings, the federal form 990. Unlike household data from tax returns or surveys, the form 990 data comprises a long panel with no privacy restrictions for high-income households (who make up a large share of charitable giving) and no incentives for the reporting entity to overstate contributions. It is estimated that a one percent change in the tax cost of giving following the TRA86 causes about a four percent decline in charities' contribution receipts. Such elasticities imply a much larger tax-sensitivity of charitable giving than has been reported by most studies using household data.

A final section of the paper reconciles these findings with smaller estimates reported in previous studies. This greater tax-sensitivity can be explained by heterogeneous responses of donors and charities alike to tax incentives, and differences in the composition of available data sources. The IRS does not require some major charitable sectors to file a form 990, particularly houses of worship, which prior literature has

suggested are less tax-sensitive than the secular charities that are in the sample. For sectors that do file the form 990, the effect of the TRA86 on charitable contributions is more important for some charities than others, particularly health-related causes. Furthermore, individual income tax return data is likely to have significant measurement and reporting error, and often omits the high-income households who make up a high share of charitable giving to protect privacy or because of surveying difficulties. The top ten percent of households by income appear to drive the tax response.

1 Charitable Contributions and the US Tax System

The charitable contribution deduction was added to the federal tax code by the War Revenue Act of 1917. The federal government sharply increased the burden of the federal income tax on high-income households as the US prepared to enter the First World War, increasing the top marginal rate from 15 percent to 67 percent. Senator Henry F. Hollis of New Hampshire (who also happened to be a regent of the Smithsonian Institution) introduced an amendment allowing up to 15 percent of income to be given without tax to "corporations or associations organized and operated exclusively for religious, charitable, scientific, or educational purposes, or to societies for the prevention of cruelty to children or animals" (*Congressional Record* v. 55 pt. 7 p. S6741). Charitable giving is a luxury good, Hollis argued: "After they have done everything else they want to do. . . [people give] to a college or to the Red Cross or for some scientific purpose." Therefore, at the margin, high-income households will maintain their own consumption first, and "when war comes and we impose these very heavy taxes on incomes, [charity] will be the first place where the wealthy men will be tempted to economize" (*Congressional Record* v. 55 pt. 7 p. S6729).

Hollis's amendment was accepted quickly and unanimously. The brief Congressional debate on the matter, however, presaged a long scholarly one. The literature estimating individual donors' response to tax incentives is large and long, but a consensus on the effect the deduction has on charitable giving remains elusive. Because the deduction has been in the tax code continuously since 1917, its efficacy is has traditionally been estimated by computing elasticities of charitable contributions relative to the "tax price" of giving when legislation alters marginal rates, and therefore the value of contribution incentives.[5] A meta-analysis

[5]Tax rates determine the "price" of giving to charity, because giving \$1 to a charity costs an itemizing taxpayer only \$1–τ in after-tax personal consumption, where τ is the marginal tax rate. For example, with a tax rate of 36 percent, an itemizing tax payer can give \$1 to a public charity, or could pay the tax authority 36 cents and keep 64 cents for herself. So by reducing the top marginal rate from 50 percent to 28 percent, the TRA86 increased the federal tax cost of giving \$1 to charity among top-bracket itemizing taxpayers from 50 cents to 72 cents, the amount of after-tax income the household could otherwise keep for personal use. A tax cut is therefore equivalent to a price increase in the cost of charitable giving, and can help to identify the importance of this incentive

by Peloza and Steel (2005) tabulates 70 peer-reviewed studies, most estimating a tax elasticity of charitable contributions between -4 and -0.4, with a median of about -1.2.

One problem with individual tax return data is correctly distinguishing between changes in permanent giving and shifting of giving across years to maximize the tax benefit of anticipated rate changes — a problem made more difficult by the fact that marginal tax rate is a nonlinear function of income. If households strategically "bring forward" giving, comparison of contributions just before and after a tax change overstates the permanent response. Separating income and price effects can mean, for instance, comparing tax rate changes among high-income groups with low-income groups, or other not-quite-ideal approaches. See the discussion of estimation issues in Andreoni (2006) and Bakija and Heim (2011). For example, using the same panel data but different assumptions about permanent and temporary changes, Randolph (1995) finds that most of the tax response is temporary shifting, with a permanent giving tax elasticity of about -0.5, while Auten et al. (2002) find a permanent elasticity of -1.2, with a small temporary response.[6] In addition to problems with intertemporal shifting, survey data has shown that tax incentives can encourage the replacement of gifts of labor (*i.e.* volunteering) with gifts of money (Gruber 2004, Feldman 2010). The sensitivity of deductible contributions is greater than the total response of money plus the cash equivalent of volunteering hours.

Individual tax filing data also measures actual charitable giving with error. Itemizers overstate their contributions to evade taxation (Slemrod 1989, Fack and Landais 2010), while non-itemizers have no incentive to report contributions at all, underreporting their donations (Dunbar and Phillips 1997, Duquette 1999). Though surveys should in theory overcome these limitations of tax return data, household survey datasets do not elicit truthful responses from tax evaders (Hurst et al. 2013), with the additional limitations that survey data can be costly to gather, may be biased by respondents' misremembered giving behavior, and tend to include few upper-income households — the largest donors in absolute terms, but those most difficult to survey.

These problems with identification and measurement have motivated experimental approaches to the study of altruistic giving. Charitable giving experiments vary the cost of making a contribution through matching grants in a randomized fundraising campaign. For example, Karlan and List (2007) solicit dona-

for donors.

[6]Both papers use the IRS publicly available panel data. Auten et al. benefit from their later date by being able to study data ending in 1993, whereas Randolph's panel ended in 1988; however, since the 1981 and 1986 tax reforms are the major legislation spanned by the panel these additional years should not explain the substantial difference.

tions from potential contributors with a randomized matching grant, and find that varying the generosity of the matching subsidy does not affect giving. Other experiments have found that varying a match does affect donations (Huck and Rasul 2011, Karlan et al. 2011), though as in studies of tax data, there is some evidence that lowering the cost of giving through a match may just induce donors to shift their donations across time (Meier 2007) or across charities (Konow 2010) rather than increase total giving. Field experiments also usually lack information about donor incomes, either soliciting lists of prior donors (Karlan and List 2007, Karlan et al. 2011) or studying large groups of people in dense suburban neighborhoods (DellaVigna et al. 2012) or supermarket entrances (Andreoni et al. 2011) where very high-income persons are not likely to be observed.

This paper takes a new approach to this question: how does a change in the tax cost of giving affect contributions reported by the charities themselves? Instead of looking at *individuals'* contribution data, the outcome of interest is donations reported by the charities themselves on the IRS form 990.[7] The use of form 990 data sidesteps many of the problems with individual studies. Unlike survey data, experimental data, and publicly available tax return panel data, the charities report contributions from high-income households. Unlike tax filers or survey takers, charities have no incentive to overstate or misremember their contributions. Furthermore, unlike available survey data and tax return data, the Statistics of Income form 990 data comprises a panel of thousands of observations spanning twenty-five years, with all identifying information left uncensored.[8] This study is therefore a powerful complement to the existing literature, permitting a direct look at the donations received by the intermediaries who actually provide charitable services, without concern about the observations or misreporting problems that are a feature of household data.

[7]One paper by Yetman and Yetman (2013) uses form 990 data to estimate partial correlations of direct contributions with organization characteristics and a vector of time series, including last-dollar tax cost, over the 1991-2007 period for major nonprofit subsectors. For the most part, however, economists have made use of 990 data to examine organizations' strategic behavior, not tax policy *per se*. Okten and Weisbrod (2000) and Andreoni and Payne (2003) use 990 data to show that nonprofits do not choose their fundraising intensity at a revenue-maximizing level, implying that a revenue-maximizing objective function is a poor description of these groups' behavior. Hines (1999) argues that charities pay unrelated income business tax — that is, they report non-tax-exempt income — only when their tax-exempt funding channels are insufficient to meet their needs (i.e. taxable income is sort of an inferior good). Marx (2012) finds that charities will *reduce* their income to avoid a tax compliance notch that requires greater administrative costs tracking their finances.

[8]The IRS public panel originally oversampled high-income returns, like the public cross-sectional data, but suppressed high-income household's state of filing. Furthermore, after tax year 1981 the number of observations in the panel data is greatly reduced, from about 46,000 in years 1979–81 to 9,730 in 1984, before expanding the panel with new households to just over 20,000 in 1986. Just a handful of high-income households are observed for more than a few years of the panel.

2 Measuring the Tax Cost of Charitable Contributions

This paper takes a different approach than the previous literature by comparing large and conditionally random increases in the marginal tax cost of a charitable contribution across states and time. The approach creates a measure of tax price change that is not influenced by states' income distributions or economic trends — only by arbitrary differences in states' legal environments. The key is the Tax Reform Act of 1986 (TRA86), which interacted with preexisiting state income tax codes such that the combined federal and state tax cost of giving changed differently across US states.

The Tax Reform Act of 1986 (TRA86) was the biggest change by far in the tax cost of charitable contributions in recent history. This reform is best known for its steep reduction in marginal rates — the top rate fell from 50 percent to 28 percent, and the number of rate brackets was reduced from fifteen (sixteen for single filers) to just two. However, the TRA86 was not just a rate reduction, but a significant revision to the US federal income tax base. These tax base changes passed through to state income tax systems in unanticipated ways that varied from state to state.

A measure of the first-dollar tax cost faced by donors is constructed from the IRS Public Use File (PUF) of individual income tax returns and from TAXSIM (Feenberg and Coutts 1993, Internal Revenue Service 2012). For a nationally representative sample of individual tax returns, the marginal tax subsidy for the first dollar given is calculated under the laws of each US state in each year from 1977 to 2007.[9] A measure for the tax cost of giving at the state and year level is computed by taking the average of these individual marginal tax costs, weighted by total reported contributions.[10]

[9]TAXSIM is a tax calculator maintained and hosted by the National Bureau of Economic Research which uses up to 198 different tax return variables to compute household federal tax liability for any year since 1960, or state tax liability for any of the fifty states or the District of Columbia since 1977. Beginning with a nationally representative set of individual income tax returns from year 1984, the first-dollar marginal cost of a contribution is calculated for each return in every state s and every year t by the following procedure.

1. Set charitable contribution variables equal to zero dollars.
2. Adjust all other dollar-valued variables for inflation to the same real values in year t dollars.
3. Change the state code to the value for state s.
4. Calculate the combined federal and state tax liability of each return.
5. Replace the zero value for an itemized cash contribution with a small, positive contribution.
6. Recalculate the combined federal and state tax liabilities.
7. The marginal tax cost is computed by dividing the change in combined tax liability by the change in the cash contribution variable.

More detail on each step of this calculation and more information on the public use cross-section data are in appendix A.

[10]In section 1, it was noted that contributions reported on individual tax returns are reported with error. The data for 1984 are better than other years in terms of observing the giving of non-itemizers because of the presence of a modest above-the-line contribution deduction introduced by the Economic Recovery Tax Act of 1981 (and abolished by the TRA86), which allowed a

Figure 2A plots the tax cost of giving by state and year. The effect of the TRA86 on the tax cost of a cash donation is immediately apparent; no other federal tax reform over the same period comes close to matching its magnitude. Importantly, the size of this shift varied across the states substantially. Figure 2B charts annual changes in the state and year tax cost measure. The change in the log cost of a contribution from 1986 to 1988 ranged from 14 percent to 22 percent, with a median change of 18 percent. There is substantial interstate variation in change in the cost of giving following the TRA86, but only small, isolated changes among the states before and after; the TRA86 explains most of the change in the state-level tax cost of giving during the time period.

Ideal for this study is that these changes in the value of the charitable deduction were randomly assigned across states. Evidence supporting this conjecture is that the tax cost of giving before the TRA86 does not predict the state-level change from 1986 to 1988. Figure 3 plots marginal tax cost of a contribution in 1986 against the change in tax cost from 1986 to 1988. Each point is one state marked by its postal abbreviation, except for the point labeled "NT" in the upper right region of the scatterplot, which marks the seven states with no state income tax.[11] A linear regression plotted through this scatterplot yields only a weak and statistically insignificant relationship between change in average tax cost and the 1986 level.[12]

More surprising is that the proportional change in the tax cost of contributions is not correlated with the level before 1986. This is consistent with the claim that the magnitude of the change is driven not by rates, but by complex interactions between state income tax laws and the changes to the federal code made by the TRA86. These interactions are a function of choices made by state legislators *before* the federal reform, and the resulting changes in state tax rates appear to be an accidental byproduct of the federal law.

Consider three examples to illustrate this further. First, fourteen states allowed taxpayers to deduct their

limited deduction for the first $300 of charitable giving. This deduction does have limitations: 18.1 percent of non-itemizers claim the maximum allowable amount, and contributions by people not required to file, or who owed no tax against which to deduct their contributions, are still unlikely to be observed. On the other hand, the above-the-line deduction was not aggressively audited, giving both itemizing and non-itemizing taxpayers an incentive to overstate their donations and reduce their taxes in this year. (The 1984 data are preferred to the 1985 cross-section specifically because the $300 limit, which was raised in the following year, censors the dishonest as well as the generous; using 1985 data obtains very similar results, though.)

[11] Two states are omitted from this and other figures. West Virginia repeals its state charitable contribution in 1987, and is omitted from every analysis in this paper because of endogeneity concerns. North Dakota's TAXSIM-computed marginal rates are implausibly high for an unknown reason in 1986; see the discussion in appendix A. Therefore North Dakota is also dropped.

[12] Specifically, the plotted linear fit regresses

$$\begin{array}{rccc} \Delta_{`86-`88} \ln(TaxCost_p) = & 0.2115 & +0.0828 * \ln(TaxCost_{p,`86}) + \varepsilon_p \\ & (0.0495) & (0.1247) \end{array}$$

Where the log of the 1986 federal and state tax cost of giving in a state with policy p is denoted $TaxCost_{p,`86}$, and the change in the tax cost from 1986 to 1988 is denoted $\Delta_{`86-`88} \ln(TaxCost_p)$. Regression coefficients are reported directly in the estimated equation, with standard errors in parentheses below.

federal tax liability from their state taxable income. This means that a reduction in federal tax liability increased state taxable income and — to the extent that this increase moved taxpayers into higher-rate tax-brackets at the state level — also increased state marginal rates. In these states, the overall change in the cost of giving was dampened by the state response.[13]

Second, the states varied in the links made between their state systems and federal tax definitions. In the extreme case, four states used "piggyback" tax systems where state tax liability was a function of federal tax liability, meaning that when the federal government reduced its marginal rates, those states' marginal rates fell proportionally, amplifying the total change. Four states used the federal definition of taxable income (without a direct "piggyback" system), which meant that the reductions made by the TRA86 to credits, deductions and exemptions increased state taxable income as well, dampening the federal change. Twenty-five states use the federal definition of adjusted gross income; six states had no federal starting point in their state income tax laws.[14]

Third, states were affected to different degrees by the Alternative Minimum Tax (AMT), a schedule of lower marginal rates on a broader tax base that affects taxpayers who take "too many" itemized deductions. The TRA86 eliminated or limited many deductions, greatly reducing the number of AMT-eligible returns: In 1986, 47.9 percent of returns reporting over $1 million dollars adjusted gross income were subject to the AMT, while in 1987, the share of these incomes subject to the AMT was just 6.6 percent (Internal Revenue Service 1987). Therefore, many high-income households who paid the AMT in 1986 saw marginal rates *increase* from the pre-1986 20 percent AMT rate to 28 percent, *reducing* rather than increasing their marginal tax cost of a charitable contribution. Because some state and local tax payments can be taken as itemized deductions, high-income households in states where state taxes were higher were more likely to have a greater share of AMT taxpayers, dampening the effect of the federal change.

It is unlikely that state legislatures anticipated many of the changes of the TRA86, or that they would have adapted their tax policy for charitable contributions beforehand. Nor did state legislatures move swiftly to capture money left "on the table" by the federal government. Table 1 shows that, if anything, the states

[13]States allowing the deduction of federal income tax are Alabama, Arizona, Colorado, Delaware, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Missouri, North Dakota, Oklahoma, Oregon, and Utah (ACIR 1986, table 54).

[14]See ACIR 1986, table 52. In 1986, the "piggyback" states are Nebraska, North Dakota, Rhode Island and Vermont. The states using federal taxable income without a piggyback system are South Carolina, Idaho, Utah and Oregon. The states using federal AGI and most deductions are Maine, Delaware, Maryland, New York, Iowa, Kansas, Minnesota, Missouri, Georgia, Kentucky, Louisiana, Virginia, West Virginia, New Mexico, Oklahoma, Colorado, Montana, California, and Hawaii. The states using federal AGI only are Massachusetts, Illinois, Indiana, Michigan, Ohio, Wisconsin and Arizona. The states with no federal starting point are New Jersey, Pennsylvania, Alabama, Arkansas, Mississippi, and North Carolina. Connecticut, New Hampshire and Tennessee only tax capital income. Alaska, Florida, Nevada, South Dakota, Texas, Washington, and Wyoming have no state income tax.

moved to reduce their own marginal rates as part of a broader movement of rate-reducing tax reform.[15] The next section explores how this large natural experiment in the tax price of charitable giving affected nonprofits' revenue.

3 Results

Donations to nonprofits are measured using IRS forms 990, a financial disclosure form many tax-exempt nonprofits must file annually. The IRS Statistics of Income Division (SOI) has compiled machine-readable data files that are samples of 990s in 1982, 1983, and 1985 to the present. These data sample all organizations with over $10 million in assets and stratified subsets of smaller organizations. The SOI data also try to follow the same organizations each year — making it feasible to use SOI 990 data files to construct a panel of nonprofit organizations oversampling large organizations.[16] Charitable contributions are measured using "direct public support," the sum of all contributions from taxable entities directly to the organization, which is overwhelmingly composed of individual donations.

Figure 4A provides descriptive evidence on the relationship between contributions and tax cost in the raw data. The change from 1985 to 1988 in contributions to individual nonprofits is plotted on the vertical axis, while the change in the tax cost measure computed in section 2 for the state where the charity filed its form 990 is plotted on the horizontal axis. A linear fit through the plot finds that a one percent increase in tax cost is associated with a 2.6 percent decrease in contributions; this slope estimate is statistically different from zero at the five percent level (state-clustered standard error = 1.27 on a coefficient of -2.6).[17] The most salient feature of this plot is not the negative slope of the linear fit, but the variance of the changes in contributions. Several organizations report huge swings in contributions across years: 9.7 percent of organizations report log changes from 1985 to 1988 greater than 2 or less than -2.[18] Figure 4B accounts for this by averaging changes in contributions within bins by the state log tax change by hundredths (0.14 ±

[15] In the TAXSIM system, there are five total changes to the deduction policies of states with income taxes in the 1982-2007 period. In addition to West Virginia's repeal of its deduction in 1987, Louisiana repeals its in 2003 and then restores it in 2007, and Massachusetts enacts one in 2001 but repeals it in 2002.

[16] The SOI provides cross-sectional but not sample weights, and the procedure for carrying over some organizations but not others from year to year is not documented; additionally, organizations that ought to be observed every year are sometimes missing without explanation. For these reasons, all regressions in this paper are unweighted.

[17] If a linear fit is estimated for between this tax change and three-year contribution growth for 1982 to 1985, the slope is positive and statistically insignificant; estimates and similar scatterplots are omitted for brevity.

[18] One Colorado organization at the bottom of the chart reports a log change in contributions of -11, receiving $6,260,000 in 1985 but just $1,210 in 1988. It seems like an astonishing plunge until one sees that this is the U.S. Olympic Foundation following the 1984 summer games in Los Angeles.

0.05, 0.15 ± 0.05, . . . , 0.22 ± 0.05). The negative relationship between the tax rate change and contributions becomes more visible.

Difference-in-Difference Estimates

The following difference-in-difference framework formalizes this analysis and accounts for changes in other observed state-level variables:

$$\ln(Contributions_{it}) = \alpha_i + \beta\Delta_{86-88}\ln(TaxCost_{s(i)}) * Post86_t + \delta_t + \mathbf{X}'_{\mathbf{st}}\boldsymbol{\gamma} + \varepsilon_{it} \quad (1)$$

where $Contributions_{it}$ is real direct contributions reported by organization i in year t, *Post86* is a binary variable equal to 1 for years after 1986 and 0 before, $\Delta_{86-88}\ln(TaxCost_{s(i)})$ the change in the log mean tax price of giving (1–τ) from 1986 to 1988 in state s, δ_t is a year effect, and α_i is an organization fixed effect. The coefficient of interest is β, which captures the difference in contributions between states with different changes in tax price following the TRA86. Since both the dependent and treatment variables are in logs, we interpret β as an elasticity of contributions with respect to the tax cost of contributions.[19]

Alternative specifications control for differential economic trends by including region-by-year effects $\delta_{r,t}$ that capture unobservable variation across time among the four Census regions, or a row vector of state-level macroeconomic indicators $\mathbf{X}'_{\mathbf{st}}$ to capture changes in the local economic environment over time.[20] State-year macroeconomic variables include state population, real gross state product, real per capita income, unemployment rate, and poverty rate, all measured in logs.

Measurement Error

Once concern with this specification is that changes in tax prices are measured with error if organizations received donations from out-of-state donors. This measurement error would attenuate estimates of the tax elasticity β toward zero. To minimize this source of measurement error, I limit the sample of nonprofits to those which plausibly received virtually all of their contributions from donors in their filing state. Individual nonprofits are omitted if they (1) observe a change their state of filing at any time in the full 1982-2007

[19]This approach makes some assumptions about the relationship between the treatment variable and contributions. First, it assumes that the effect of a tax change is log-linear. A more general specification dividing states into "treatment" and "control" groups by whether their tax change was above or below the median is presented in appendix B, and yields similar results.

[20]There is not a strong regional pattern to the distribution of tax changes. Tax changes by state are presented in appendix table A3, and mapped in appendix figure A1.

set of form 990s, since this suggests they are not committed to provision of goods to a local area; or if (2) the organization's name or mission statement on the form 990 includes key words like "international" or "global" that signal a focus of provision outside their local area; or (3) the charity ever files a return on behalf of a group of affiliated charities, since these returns may include financial data for out-of-state affiliated groups; or (4) the charity is ever among the top 25 largest organizations within its sector, since these are likely to be leading groups with national donor bases (*e.g.* just by virtue of being a nationally prominent institution, the income tax laws of Massachusetts affect a small share of donors to the Massachusetts Institute of Technology, but virtually all donors to Emmanuel College, a small Catholic institution just across the Charles River).[21] These sample selection criteria are also omitted to examine robustness, without qualitatively changing the results, in appendix B.

Difference-in-Difference Results

Estimates for these regressions are reported in table 2, row A; point estimates of the elasticity range from -3.5 to -5. Column 1 reports the basic regression, which finds an elasticity of contributions of -4.5 with respect to the tax cost of giving. Similar elasticities with the inclusion of region-by-year effects (-5.0), macroeconomic controls (-4.0) or both (-3.5). Standard errors are reported in parentheses and clustered by state to account for serial correlation across states and years. All estimates are statistically different from zero at the five percent level.

One threat to identification of tax response β is that regression results could be driven by states that change their own tax laws. To address this concern, I replicate the specification but drop the sixteen states which changed their marginal rates between 1986 and 1988. The results (table 2, row B) indicate that, if anything, inclusion of those states attenuated the estimated elasticities toward zero; in the reduced sample, the estimates range from -4.7 to -6.2.

These results are not driven by decisions made about the composition of the main sample. For example, one may be concerned that the large estimated elasticities are a feature of the local organizations retained in the estimation sample, and that national organizations have less elastic donations. Because the state of

[21] In addition to dropping organizations which are likely to have donor bases that straddle state borders, organizations without at least one observation in both the three pre-reform years (1982–3 and 1985) and the three years after the TRA86 was fully phased in (1988–1990) are omitted, so that the same charities are being compared before and after the TRA86. Furthermore, charities which ever report zero direct contributions are dropped so the dependent variable can be measured in logs without sample selection at the extensive margin of contributions; this is not a radical reduction of the sample as most charities either always receive contributions, or never do. A detailed breakdown of each step of the sample selection process is presented in appendix A.

residence of donors to non-local nonprofits is not observed, heterogeneity by local-ness cannot be tested directly. However, inclusion of non-local groups in the sample permits placing a lower bound on the magnitude of the estimate for all nonprofits: if groups with national donor bases are included in the estimation sample, the attribution of all changes in donation behavior to particular state policies will tend to attenuate estimates toward zero. When the sample is expanded to include organizations likely to have out-of state donors, the obtained estimates are not wildly altered, ranging from -2.8 to -3.8 and remaining statistically significant (see table 2, row C). Even if attenuation bias were small — an unlikely hypothetical given the large share of contributions that flow to national and international groups — the obtained point estimates imply a high sensitivity of charitable giving to tax incentives.[22]

Second, one may also be concerned that the use of an unbalanced panel distorts the obtained results for the main sample. Because the Statistics of Income data only try to sample the largest organizations by assets every year, an unbalanced panel allows use of information about more and smaller organizations than otherwise. However, if the likelihood that a charity is observed in the Statistics of Income dataset is correlated with direct contributions, then estimates from an unbalanced panel may be biased.[23] Row D of table 2 reports continuous difference-in-differences estimates using only organizations observed in all six years. The results are consistent with the main sample, obtaining elasticities from -3.2 to -4.3; none are statistically different from the corresponding estimate in the main results.

[22]On the other hand, one may be concerned that the filters used to eliminate organizations with broad donor bases are not *strict enough*. If any remaining interstate contributions are randomly distributed, they will tend to attenuate estimates toward zero. But if flows of donations across states are nonrandom, the estimates might be distorted by these cross-border effects. For example, if the magnitude of the tax change is greater for states that encompass major central cities than the states that encompass their outer suburbs (whose residents may give across borders to downtown institutions), and if those central-city organizations have more tax-sensitive donors than small-town charities in the rural areas of adjacent states, then a spatial pattern in the tax response would be improperly attributed to interstate variation in tax changes, overstating the resulting estimates. This possibility is investigated in two ways. Row E drops organizations located in Census Metropolitan Statistical Areas that straddle state borders. The estimates obtained with this restricted sample are not qualitatively or statistically different from those in row A. Second, the analysis is repeated for charities that meet other sample selection rules, but are excluded for meeting the criteria of nationally prominent charities, in row F; this constitutes a placebo test for interstate flows that are coincidentally associated with the variation in the tax effect. The coefficients on the tax treatment variable are positive and statistically insignificant, suggesting that if anything interstate donation flows bias the main estimates toward understatement.

[23]For example, Marx (2012) shows that charities find the form 990 sufficiently burdensome that they will reduce their incomes in order to postpone expanding their capacity for accounting and regulatory compliance — if fast-growing organizations struggled to expand their ability to comply with IRS regulations quickly enough, they might have failed to submit form 990s in time for inclusion in the SOI data set in all years, causing slow-growing or shrinking charities to be observed disproportionately, overstating the TRA86's effect.

Entry and Exit

Since the main sample only uses organizations observed before and after the tax change, another concern is that the effect of the tax cost is partly observed in the form of different rates of organization entry and exit. There is no data source which observes nonprofits' entry and exit directly.[24] Nor are the Statistics of Income data appropriate for studying entry and exit, as firms are not observed every year.[25]

The date of organizations' letters from the IRS recognizing them as a tax-exempt public charities is used as a proxy measure of organization turnover. If a state's population of charities has more recent exemption letters on average than other states, then the charity turnover rate in the state must be higher (either organizations are being created more quickly than in other states, or old organizations exit more rapidly, or both). State-level shares of forms 990 filed by organizations with post-1986 exemption letters as of 1989 are plotted against post-1986 tax rate (figure 5A) and 1986–1988 change in tax rate (figure 5B). Shares of organizations with recent exemption letters are derived from the 1989 IRS Core Files, a dataset containing a limited set of form 990 variables for the universe of filing organizations (Internal Revenue Service 2011a). Neither tax variable is highly correlated with state shares of recently exempted organizations.[26,27]

Pretrends and Shifting

Another possible threat to identification in a difference-in-difference framework is differential pretrends. A second concern is that the estimated effect captures intertemporal shifting of contributions, so households can take full advantage of tax incentives.[28] Both of these conjectured problems can be tested by extending

[24]Though the IRS maintains a master file of registered nonprofit organizations, it is rarely updated and inappropriate for this type of quantitative analysis. See National Center for Charitable Statistics (2013, pp. 4–5).

[25]Although charities with at least $10 million in gross assets ought to be observed one hundred percent of the time, major organizations are frequently missing for a year or two. For example, the University of Chicago is missing in year 1997; in 1996 Chicago's total assets were reported to be $3.1 billion, well above the threshold for mandatory sampling.

[26]Post-1986 tax rate and recent exemption share have state-level correlation 0.061 (p-value = 0.6799), and tax cost change and recent exemption letter share have correlation 0.100 (p-value=0.508).

[27]As an added check, it is tested whether the change in average tax cost is correlated with exit using prospective data. Let $LastOb_i$ be the last year up to 2007 in which organization i is observed in the Statistics of Income or Core Files data sets; though failure to observe an organization does not mean it has disappeared, a recorded 990 almost certainly means it still exists. Therefore the last year of observation should be highly (negatively) correlated with date of exit. For organizations observed in the 1986 Statistics of Income data, regress

$$LastOb_i = \alpha + \mathbf{X_i'}\boldsymbol{\gamma} + \beta \ln(TaxCost_{s(i),\text{'86}}) + \delta\Delta_{86-88}TaxCost_{s(i)} + \varepsilon_i \tag{2}$$

where $\mathbf{X_i'}$ is a vector of organization i's financial variables, and the tax variables capture both the rate before the 1986 tax reform and the TRA86 state level tax change. The results of this regression are presented in appendix table B4. Though income and assets are associated with a later end date, there is no significant association between last observation year and tax rates. In summary, there does not seem to be a strong association between the TRA86 tax change and organization entry and exit.

[28]This is accounted for by dropping 1986 and 1987 from main sample; however, if households brought forward contributions to 1986 from more than one year out, it may be that the differential decline in contributions seen in 1988-1990 is really just a difference in how aggressively donors brought forward several years of planned giving.

the data sample to later years and allowing the estimated effect of the tax change variable to vary by year as follows:

$$Contributions_{it} = \alpha_i + \delta_t + \mathbf{X}'_{\mathbf{st}}\boldsymbol{\gamma} + \sum_{t \in 1982,`83,`86,`87,...,2007} \beta_t(\Delta_{86-88} TaxCost_{s(i)}) * \mathbf{1}\{year = t\} + \varepsilon_{it} \quad (3)$$

The key difference from equation 1 is the flexible specification of TRA86 treatment effects, in practice a different effect for the tax cost change β_t in all years. The path over time described by these coefficients shows the size of the gap by treatment dosage each year, relative to the gap in comparison year 1985.[29]

Figure 6 charts the point estimates of β_t by year, with dashed lines marking pointwise 95 percent confidence intervals for test of $\beta_t = 0$ (that is, statistically indistinguishable from 1985).[30] If a pretrend across the states were driving the results, we should see a downward pretrend before the TRA86 takes effect (that is, $\beta_{1982} > \beta_{1983} > 0$). Instead, the estimates before 1986 are statistically insignificant and, if anything, increasing. Furthermore, if the obtained estimates were driven by intertemporal shifting, then we should see a spike in 1986 when the law becomes a known quantity ($\beta_{1986} > 0$) followed by a compensating fall when the tax incentive has been reduced in value, reverting to zero over time ($\beta_{1988} < \beta_{1989} < \cdots < 0$). Instead, β_t continues falling after 1988 before settling into a lower long-run level in the early 1990s, suggesting that if anything prospective donors respond with a lag.

Extensive Margin of Contributions

The main sample omits organizations with zero direct contributions in any of the years of interest. For the full 1982-2007 sample over 78 percent of organizations either *always* receive direct contributions, or *never* do — there is a fundamental difference between organizations that do and do not finance their operations with contribution revenues. Still, the charities with changes at the extensive margin may be important.

To address this, equation 1 is reestimated using a binary variable equal to one if contributions are strictly positive and zero otherwise .

$$ReceivedCont_{it} = \alpha_i + \mathbf{X}'_{\mathbf{it}}\boldsymbol{\gamma} + \beta\Delta_{86-88} \ln(TaxCost_{s(i)}) * Post86_t + \varepsilon_{it} \quad (4)$$

[29] That is, because the treatment does not actually occur until 1986, we expect β_{1982} and β_{1983} to be equal to zero. If instead we observe $\beta_{1982} > \beta_{1983} > 0$, it might mean that the difference-in-differences estimates are describing the continuation of a preexisting trend in contributions. And if β_t rapidly reverts to zero after the policy change, despite the permanent change in tax cost of giving shown in figure 2A, that would be consistent with the estimates describing a short-term shifting of intended contributions, rather than a permanent effect of the policy change on contributions.

[30] The reported point estimates and standard errors are also tabulated in appendix B.

where $ReceivedCont_{it}$ is the binary variable for positive contributions and other variables are as previously defined. The estimation sample is the same as described above, with the inclusion of organizations reporting zero contributions but meeting all other sample criteria. These estimates, reported in table 3, column 1, show no statistically significant relationship between the tax cost change and the probability of strictly positive contributions.[31]

As an additional check, row G of table 2 reports regressions identical to those in table 2, column 2, except uses as dependent variable the log of direct contributions plus a constant (since log of zero is undefined).[32] The obtained estimates are slightly smaller in magnitude than those in table 2 row A, though only statistically different in columns 2 and 3. The obtained estimates are still quite large, and do not suggest a different interpretation of the main results.

Endogenous Fundraising

Fundraising could be an omitted variable that affects — or at least changes the interpretation of — estimated tax elasticities. Estimates may capture both a direct effect (donors find giving more expensive after tax) and indirect effect (charities expect lower return on fundraising following a tax cut). Table 4A examines whether fundraising changes on the extensive margin, by presenting results for regression of a variable equal to 1 if a charity has strictly positive fundraising expenses and zero otherwise on the same regressors as table 2 (see equation 1). Similarly, table 4B regresses the log of fundraising expenditure (plus $25,000 to avoid dropping zeroes) on the same regressors. Neither set of regressions finds a statistically significant change in fundraising following the TRA86.[33]

[31] Use of the entire Statistics of Income sample (to year 2007) and of the time-varying tax cost measure $TaxCost_{st}$ finds that the partial correlation on *TaxCost* is close to zero and not statistically significant (results presented in table 3, column 2). Use of a logit instead of a linear probability model does not change either set of results (not presented for brevity).

[32] The preferred additive constant is $25,000, which is the minimum income requiring an organization to file a form 990. In the literature on individual contributions, it is common to include zeroes in the logged dependent variable by adding $10. This is appropriate because the individual tax return data includes a large number of small, positive contributions: for example, in 1985, 11.9 percent of individual returns deducted a gift between $1 and $100. In contrast, very few charities in the sample ever report contribution receipts below $10,000, and a change in logs from $10 to $525, the first percentile of positive observations in 1985, is greater than the log increase from the median ($467,109) to the 95th percentile ($1,110,000). A larger additive constant than 10 is therefore necessary to use observed zeroes in approximate logs without underweighting the variance among positive observations.

Appendix table B3, columns 1 and 3 report results for an addition of $10,000 and $50,000 as well. Column 4 of the table repeats the regression with the added $25,000, but only for the same sample as in table 2. Adding the additional data and changing the dependent variable reduces the magnitude of the estimates somewhat, but qualitatively the result — a large, negative relationship between average tax cost and contribution revenue — is unchanged.

[33] The average charity in the sample experiences a change in the *TaxCost* treatment variable of 0.185, which means that, interpreted as linear probabilities, the largest point estimates in table 4A imply a fall of about six percentage points in the likelihood of engaging in fundraising. The point estimates in table 4B imply an elasticity of roughly -1 for fundraising expense in response to a tax change, so a one percent increase in the representative tax cost of giving might cause a one percent decrease in fundraising. These effects are economically significant, but not statistically different from zero.

Tables 4C and 4D modify the specification in equation 1 to add charities' fundraising expenditures as regressors. Unsurprisingly, choosing to fundraise and the amount spend fundraising are both associated with higher contribution revenues.[34] However, the inclusion of fundraising variables does not change the estimated tax elasticities greatly, nor are the estimates statistically different from those in table 2.[35]

4 Reconciling Estimates with the Literature and Aggregate Time Series

The striking discrepancy between the estimates presented in table 2 and the lower magnitudes obtained in the literature is readily explained by differences between charity and household data sources. The form 990 data excludes one of the least tax-sensitive sectors — churches and houses of worship — implying that estimates for the remaining charities should be more sensitive than charitable giving generally. Publicly available individual tax return panel data only observes itemizing taxpayers and covers high-income households sparsely. Because high-income households are more tax-sensitive than middle-income households, and give a large share of all dollars contributed, the household data's focus on middle-income households should find less giving sensitivity than the charities' returns.

Heterogeneity by Type of Charity

Many charitable organizations do not file the form 990, including private foundations (which file the 990-PF), government entities (such as public universities), very small organizations, and churches. In 1985, 501(c)3 public charities required to file the form 990 accounted for 41.5 percent of all organizations by contributions; giving to churches and other houses of worship made up over half of charitable giving (Giving USA 2013). The organizations observed in the Statistics of Income data represent 24.6 percent of all charitable giving in 1985; the observations retained in the main sample represent 10.7 percent of all charitable contributions.

Analysis of survey data has suggested that giving to churches is less tax-sensitive than other charitable

[34] Note that, since we have made no attempt to deal with the endogeneity of fundraising expenditures, these estimates should not be interpreted as causal effects.

[35] Table 4D adds interactions between the tax cost treatment and the fundraising variables. The obtained estimates reveal a heterogeneous response by fundraising level. For the mean level of log of fundraising (11.51), the estimated marginal effect of a tax change is comparable to those estimated in the main specification. For example, in column 1 of table 4D the marginal effect on the tax treatment variable at the mean is $-8.46 + 11.51 * 0.358 - 0.174 \approx -4.51$, compared with -4.45 in column 1, row A of table 2. However, the nonlinear estimates imply that there is a greater response for organizations which reduce their fundraising following the tax change — suggesting that organizations have important information about the effectiveness of their solicitation efforts under changing tax conditions.

giving (Feldstein 1975; Giving USA 2013). This is consistent with the greater volatility of aggregate giving by sector: table 5 reports the growth rate and variation for major charitable sectors' donations. Religious giving is the least volatile of any of the charitable sectors, with a standard deviation of just over two percentage points in its annual growth rate. This is true in the years before 1986 and after, as well. Over the 1982-1990 period, real annual change in aggregate religious giving had a coefficient of variation of 1.04, compared to a coefficient of 2.25 for total charitable contributions.[36] Because the form 990 data does not include churches, we therefore would expect estimates of tax-sensitivity to be of larger magnitude than if churches were included.

While churches are not observed in form 990 data, we can test whether there are differences across sectors that are observed. The NCCS 990 data report National Taxonomy of Exempt Entities (NTEE) sector codes for each organization. Retained organizations are not evenly distributed among the sector codes: health charities are the most commonly observed type, followed by education and human services, then by arts and culture charities and by grantmaking charities (such as United Ways and community foundations). No other top-level NTEE sectors have more than 100 organizations observed in the sample.[37]

To test for heterogeneity by charitable sector, equation 1 is modified so that for each nonprofit sector S of interest, I estimate

$$\ln(Contributions_{it}) = \alpha_i + \beta\Delta_{86-88}\ln(TaxCost_{s(i)}) * Post86_t + \delta_t + \mathbf{X}'_{\mathbf{st}}\boldsymbol{\gamma} + \varepsilon_{it}$$
$$+\zeta Post86_t * \mathbf{1}\left[Sector_i = S\right] + \eta\Delta_{86-88}\ln(TaxCost_{s(i)}) * Post86_t * \mathbf{1}\left[Sector_i = S\right] \quad (5)$$

where $\mathbf{1}\left[Sector_i = S\right]$ is an indicator equal to 1 if organization i is in sector of interest S. Additional coefficients ζ and η allow for a different effect on organizations S than the rest of the sample. These coefficients, as well as β and p-values for the joint significance of the sector-S estimates, are reported for the five most common sectors in table 6.

The results are consistent with different tax responses by charitable sector: the health and philanthropy sectors are significantly more tax-responsive than the rest of the sample, while the culture and education sectors are less tax-responsive. The human services sector is not statistically different from the rest of the sample. The magnitude of the obtained estimates is particularly striking for the health sector, which not

[36] Over this period, religious giving grew by a mean of 3.7 percent a year with a standard deviation of 3.9 percentage points; total giving grew by an average of 2.6 percent each year with a standard deviation of 5.8 percentage points.

[37] Appendix table A2 reports the number of organizations and observations in the main sample by each NTEE code.

only has a large and highly significant coefficient (-7), but which appears to drive much of the results — the coefficient for the rest of the sample is much smaller (-0.7) and not statistically different from zero when health charities are allowed to be affected differently.

Heterogeneity by Donor Income

In addition to differences in data composition, because donors' behavior is heterogeneous, computing the elasticity of received donations asks a fundamentally different question than the elasticity of donors' contributions. Tax responses vary by donor as well as by charity. Cross-sectional studies of upper-income households have found that donors' tax-sensitivity is "U-shaped" in income (Feldstein and Taylor 1976, Clotfelter 1985). That is, high-income households (in the right side of the "U") are more tax-sensitive than middle-income households. This may explain why charities have higher estimated tax-sensitivity than households: a charity might have many small-dollar donors that give regularly and are not particularly tax-sensitive, yet its overall contributions could be profoundly affected by tax rates, because a small number of generous but tax-sensitive households drive variation in total contributions.

Additional estimates using rates limited by income fractiles are presented in table 7. The top row reproduces estimates using all tax returns from table 2, row A for ease of comparison. The following rows report elasticities using $\Delta_{86-88} \ln(TaxCost_{s(i)})$ recalculated only using returns in the bottom ninety percent and for the top ten percent, five percent, one percent, 0.1 percent, and 0.01 percent of returns by income exclusive of capital gains and government transfers using the high-income thresholds computed by Piketty and Saez (2003). There is not strong evidence that disproportionate giving by high-income households is overstating the magnitudes of the coefficients in table 2. The estimates for the top 0.01% of taxpayers are smaller than the main estimates, but not significantly so. This suggests that most of the explanatory power of the tax return instrument is lost when focusing on just this top-ten thousandth of taxpayers, perhaps because these households are the likeliest to give via private family or company foundations (which are not reported as direct contributions on the form 990). The estimates using only the bottom 90 percent of the distribution also are of smaller magnitude and, depending on the specification, may not be statistically significant. Estimates using top 10%, top 5%, or top 1% of households are very similar to those for the whole population, with no point estimates smaller in magnitude than -2.8, and all statistically significant at the 1% level, with the exception of one specification using the top 1% (statistically different from zero at the 10% level). Overall, these results suggest that the top 10% of households may be important for the explanatory power of the tax

instrument, but the magnitude of their tax rate changes implies any scaling errors to the estimates in table 2 (row A) are not large.

The Role of First-Dollar Tax Rates

First-dollar tax rates are used in studies of charitable giving because last-dollar rates are endogenous to giving (since charitable contributions can move donors into lower tax brackets). However, if the *change* across years in first-dollar rates is similarly overstated relative to changes in last-dollar rates donors actually faced, then using the a representative change in first-dollar marginal rates directly as a regressor may distort estimated elasticities.

This possibility is checked by recalculating the *TaxCost* instrument at the marginal rates for non-zero contributions. Table 8 presents regression results where the tax cost of giving is computed for a contributions in current dollars of $100, which is the median itemized gift in the 1984 tax return data; $300, which is approximately the seventy-fifth percentile of itemized contributions in 1984; $500, which is approximately the ninety-fifth percentile; and $1000. The estimates using marginal rates at nonzero margins are not significantly different from those presented in table 2 row A, differing from the first-dollar elasticities by no more than ten percent. Furthermore, the differences do not change monotonically in the size of the contribution, inconsistent with the worry that the size of the tax change is a changes with the size of the contribution. It is therefore unlikely that the use of first-dollar rates directly in the regression is causing the estimates to be scaled incorrectly.

Explaining the Stagnation in Aggregate Contributions

Tax policy can matter for charitable giving, at least for local, non-church organizations, and particularly for health charities. However, the share of national income going to going to charitable contributions hardly changed following the TRA86. Far from witnessing a plunge in charitable contributions, charitable giving rose 10.1 percent in real terms from 1985 to 1988. A similar modest increase happened for the sampled organizations as well: aggregate gifts to organizations observed in the main sample in both 1985 and 1988 rose 4.7 percent over that period in real terms. If one believes that the tax cost elasticity of charitable contributions for these charities is really about -3 to -5, then one must also believe that had the TRA86 not reduced tax rates, charitable giving to these groups over this period would have risen sharply.

Such a surge is plausible. The TRA86 coincided with a rapid increase in real incomes at the top of the income distribution. Figure 7 charts the share of national income redounding to households at the top of the income distribution from 1927 to the present, and the share of all charitable giving since 1960 itemized by filers in those top income tiers (Piketty and Saez 2003). After a long decline, the top one percent of households saw their income share increase gradually beginning in the 1970s, with a particularly sharp increase over 1986 to 1988.[38] If we narrow our focus to the top one-hundredth of one percent, this pattern is even more pronounced — these households see their share of national income rise from about 1 percent in 1986 to about 2.5 percent in 1990, while their share of charitable giving rises briefly (and strategically) in year 1986 before falling back to about 1 percent of the national total.

Yet the rapid increase in top households' incomes since about 1980 has not translated into a proportionate surge in charitable contributions. These households' share of total US charitable giving has lagged behind growth in their shares of income since 1960. Figure 8 charts the share of pre-tax non-capital gains income contributed by households in the top income tiers. Giving noticeably spikes in 1981 and 1986, preceding tax cuts, before falling to lower levels; it then rises again following the tax hikes in 1990 and 1993. Taken together, these charts show high-income households giving more generously as their incomes rise, tempered by reductions as tax incentives lose value.

Had income spiked as it did over 1986–88 without a simultaneous tax cut, then charitable contributions would have surged dramatically. Table 9 reports giving per household among high-income tiers of itemizing households in 1985 and 1988. Had these groups contributed the same share of income in 1988 as they had in 1985, real personal charitable contributions would have risen by 30 percent over that period instead of 10 percent. Since this back-of-the-envelope estimate does not analyze possible changes in the giving behavior of non-itemizers or lower-income itemizers, who also saw their incentives to contribute reduced after 1986, this is a *conservative* estimate of the counterfactual increase in charitable contributions.

Additionally, a comparison with eras with similar income inequality, but differing marginal tax rates,

[38]The rapid increase in observed personal income after 1986 was not necessarily independent of changes in federal tax law. Slemrod (1996) and Gordon and Slemrod (2000) observe that 1988 to 1990 was a brief period when the top tax rate on personal income was lower than the corporate income tax rate, and argue that much of the increase in personal income was really business owners moving the tax base from C-corporations to S-corporations, partnerships, and other forms of personal income. But if the falling share of personal income contributed to charities were explained by shifting of taxable income out of C-corporations, then we should expect corporate charitable contributions to rise following the TRA86 (shifting the tax benefit of charitable contributions from individuals to corporations). Instead, corporate charitable contributions experienced a year-over-year decline every year from 1987 to 1991, both in absolute terms and as a share of corporate profits (Giving USA 2013, §18). Furthermore, the inversion of personal and corporate tax rates ended with the 1990 tax increase, but the rising share of income redounding to the top of the distribution continued unabated (figure 7). It is therefore likely that long-run changes at the top of the income distribution are driven by real changes in the economy, and not solely by tax base shifting.

tells a different story than one focused on the postwar era. The steady contributions-to-GDP ratio in the postwar period masks two countervailing trends: the steady decline in marginal tax rates (which has decreased charitable donations by raising the tax cost of giving) and rising income share of high-income households (which, because philanthropy is a luxury good, has increased charitable giving). Yet charitable giving in the interwar period — when marginal tax rates were below twenty percent for almost everybody, and the income share at the top of the distribution comparable to the late 1980's — was significantly lower than two percent of GDP. Figure 1 plots four different measures of the charitable contributions-to-GDP ratio for this earlier period from Andrews (1950) and Jones (1954), as well as itemized contributions from tax returns. Estimates of total interwar giving are consistent with a rate of contributions well below the lowest share of GDP observed in the postwar era — but rising rapidly in the 1940s as tax rates rose broadly for another war.[39]

With the benefit of longer historical perspective, there is no reason to believe charitable contributions are permanently anchored to two percent of GDP. Rather, the stability of charitable giving over the postwar period is consistent with a general decline in tax incentives for charitable giving happening concurrently with an increase in the top households' share of income. If the charitable contribution for upper-income households were to be curtailed by a future tax reform, it is entirely possible that charitable giving would fall.

5 The Importance of Tax Policy for Charitable Giving

This paper takes a new approach to estimation of the importance of tax incentives for charitable giving. It does so by using data from nonprofits' tax filings, avoiding the flaws of individual tax return data, and by exploiting interstate differences in the effects of the 1986 tax reform, a novel identification strategy. The obtained estimates imply that the tax elasticity of charitable giving is about -4 — a large effect, and one greater in magnitude than most papers using individual tax return data have estimated. This discrepancy can be explained by heterogeneity, both across types of nonprofit organization, as religious organizations are less tax-sensitive than secular groups and not observed in form 990 data, and across donors, since high-

[39]Though marginal rates did rise under the New Deal, before the Second World War they did so more as a populist gesture than a serious tax reform; the Revenue Act of 1935 set a 75 percent top marginal rate on incomes over $5 million dollars, a tax bracket believed to have applied solely to John D. Rockefeller. In contrast, filers at the 99th percentile of income from 1932 to 1939 (ranging from about $74,000 to $138,000 in 2012 dollars) faced marginal rates of 10 to 15 percent. Marginal rates at the 99th percentile of income ranged from 39 to 62 percent, however, during the war (Piketty and Saez 2003, Tax Foundation 2013).

income households are responsible for a disproportionate share of contributions and are more tax-sensitive than most households.

That the sampled charities appear to be more tax-sensitive than household donations overall limits the external validity of these findings to the charitable sector as a whole, but it also implies that a focus on the average donor response ignores heterogeneous effects of changes to charitable tax incentives across donors and across charities. Upper-income households' contributions to particular charitable sectors are quite tax-sensitive, and proposed tax reforms that undermine these incentives could have large effects on provision of those sectors' services. As policymakers consider tax reforms, they should consider both the higher responsiveness to these incentives of upper-income households, and whether the harm to charities most affected by tax incentives would be worth the additional revenue.

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Tables

Table 1: Major State Individual Income Tax Changes Legislated 1986–1988

	1986	1987	1988
Eliminated Deduction for Contributions		WV*	
Reduced Marginal Tax Rates	DE, MI, PA, VT	CA, IA, NY, WI	OK, UT, VT
Increased Marginal Tax Rates	NM, UT	ID, IN, MT, ND†	AZ

Notes: (*) W. Virginia is dropped from all regressions because of this policy change. (†) North Dakota has implausibly high marginal rates in the TAXSIM system until 1987 and is dropped; see discussion in appendix A.
Sources: ACIR 1987–89, table 49; Feenberg and Coutts (1993).

Table 2: Difference-in-Differences Estimates of Effect of Tax Incentives on Charities' Received Contributions

		(1)	(2)	(3)	(4)
		Log Direct Contributions			
	Main Sample (N=16882, 3273 Orgs.)				
(A)	$\Delta_{86-88}TaxCost_{s(i)}$	-4.450**	-5.016***	-3.990***	-3.503***
	$*Post86_t$	(1.723)	(1.420)	(1.185)	(1.140)
	R-squared	0.861	0.862	0.862	0.862
	Excluding Rate-Changing States (N=10422, 2024 Orgs.)				
(B)	$\Delta_{86-88}TaxCost_{s(i)}$	-6.164***	-6.263***	-4.731***	-3.977***
	$*Post86_t$	(1.633)	(1.592)	(1.342)	(1.371)
	Sample Difference (p-value)	0.018	0.0019	0.1847	0.0235
	Including Nonlocal Organizations (N=21653, 4146 Orgs.)				
(C)	$\Delta_{86-88}TaxCost_{s(i)}$	-3.153**	-3.729***	-2.760***	-3.048***
	$*Post86_t$	(1.562)	(1.273)	(1.022)	(0.996)
	Sample Difference (p-value)	0.0007***	0.0000***	0.0004***	0.0003***
	Balanced Panel (N=10449, 1765 Orgs.)				
(D)	$\Delta_{86-88}TaxCost_{s(i)}$	-3.686*	-4.716**	-3.673**	-2.962**
	$*Post86_t$	(2.074)	(1.778)	(1.507)	(1.453)
	Sample Difference (p-value)	0.3672	0.8352	0.8606	0.6277
	Excluding Interstate Metropolitan Areas (N=14297, 2812 Orgs.)				
(E)	$\Delta_{86-88}TaxCost_{s(i)}$	-4.415**	-4.922***	-4.058***	-3.776***
	$*Post86_t$	(1.757)	(1.312)	(1.201)	(1.144)
	Sample Difference (p-value)	0.663	0.7835	0.8134	0.8517
	Only National Organizations (N=4771, 908 Orgs.)				
(F)	$\Delta_{86-88}TaxCost_{s(i)}$	1.987	1.654	2.736**	2.277*
	$*Post86_t$	(1.732)	(1.418)	(1.294)	(1.202)
	With Reported Zeroes (N=21318, 4125 Orgs.)[†]				
(G)	$\Delta_{86-88}TaxCost_{s(i)}$	-3.099**	-3.420**	-2.499***	-2.155**
	$*Post86_t$	(1.496)	(1.283)	(0.920)	(0.951)
	Sample Difference (p-value)	0.2471	0.0491	0.0921	0.1090
	Org. Effects	✓	✓	✓	✓
	Year Effects	✓		✓	
	Year*Region Effects		✓		✓
	Macro Controls			✓	✓

Table 2 — Continued

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
† Dependent variable replaced with log of contributions plus $25,000
Notes: Dependent variable is log of real direct public support from a panel of IRS form 990 data for 1982–3, 1985, and 1988–90. Δ_{86-88}*TaxCost* is the change from 1986 to 1988 in the first-dollar marginal tax cost of a charitable contribution in state *s*, averaged over a fixed set of individual income tax returns. *Post86* is equal to 1 after 1986 and zero before. "Macro Controls" are a set of macroeconomic variables observed in each state and year: log gross state product, log state population, log unemployment rate, log poverty rate, and log per capita income. Standard errors in parentheses are clustered at the state level. Rows B through G differ from the main regression in row A primarily in their use of a different sample of nonprofit organizations. The sample in row B excludes charities located in states which had a state income tax rate change in years 1986–8 according to table in table 1. Row C includes organizations which meet one of the sample selection criteria for exclusion on the basis of non-local donor bases. The balanced panel analyzed in row D is restricted to organizations observed in all six years 1982, 1983, 1985, 1988–1990. The sample in row E excludes charities sited in Census Metropolitan Statistical Areas that encompass portions of more than one US state. Row F *only* includes charities excluded for violating one of the rules for dropping non-local charities, but otherwise meeting the conditions for inclusion in the main sample. The sample with reported zeroes (row G) includes charities which report zero contributions but otherwise are fit for inclusion in the main sample. To make use of zero-dollar observations feasible, the dependent variable is log of direct contributions plus $25,000 for this sample only. The samples in rows B through E and row G are all a subset or a superset of the main sample; "Sample Difference" reports a *p*-value for difference in coefficients between these alternatives and the main sample.
Sources: Form 990 data taken from the IRS Statistics of Income Division Exempt Organizations Sample, as cleaned and documented by the National Center for Charitable Statistics (Internal Revenue Service 2011c). Marginal tax cost of giving for the representative taxpayer is caluclated using the IRS Individual Public Use Tax File . Macroeconomic variables from Federal Reserve Economic Data (FRED) include population [series code POP*x*], unemployment rate [UR*x*], and per capita income [PCPI*x*], where *x* is the two-letter postal abbreviation of each US state. Gross state product data are from the U.S. Bureau of Economic Analysis [bea.gov]. State-by-year poverty rates are aggregated from March Current Population Survey microdata, as maintained by the Integrated Public Use Microdata Series (King et al. 2010).

Table 3: Probability of Positive Contributions (Extensive Margin)

	Pr(Receiving Contributions)	
	(1)	(2)
	Main Sample	All Observations
Log Assets	0.00238	0.00150
	(0.00637)	(0.00131)
Log Gov. Grants	0.00752**	0.00506***
	(0.00341)	(0.00133)
Log Program	0.00164	0.00617***
Service Revenue	(0.00365)	(0.00148)
$TaxCost_{st}$		-0.0745
		(0.0888)
$\Delta_{86-88} TaxCost_{s(i)}$	0.366	
$*Post86_t$	(0.349)	
Org. & Year Effects	✓	✓
Observations	21314	296161
R-squared	0.512	0.729
Number of Orgs.	4125	31772

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes: Dependent variable is equal to 1 if a charity receives at least one dollar in direct support in year t, zero otherwise. *TaxCost* is the marginal first-dollar tax cost of a charitable contribution, averaged over a fixed set of individual tax returns, in state s and year t. Log of assets is observed at the beginning of the year. State-clustered standard errors are in parentheses.
Sources: See notes to table 2.

Table 4: Difference-in-Differences Estimates of Fundraising Activity

A. Decision to Fundraise (Extensive Margin)

	(1)	(2)	(3)	(4)
	Positive Fundraising Expenditure (0/1)			
$\Delta_{86-88} TaxCost_{s(i)}$	-0.185	-0.348	-0.322	-0.354
$*Post86_t$	(0.501)	(0.518)	(0.388)	(0.404)

B. Fundraising Intensity

	Log Fundraising Expense +$25,000			
$\Delta_{86-88} TaxCost_{s(i)}$	-0.834	-1.298	-1.212	-1.330
$*Post86_t$	(1.342)	(1.383)	(1.159)	(1.122)

C. Direct Contributions with Fundraising Regressors

	Log Direct Contributions			
$\Delta_{86-88} TaxCost_{s(i)}$	-4.297**	-4.735***	-3.752***	-3.225***
$*Post86_t$	(1.731)	(1.488)	(1.100)	(1.065)
$\mathbf{1}[Fundraising]$	0.192***	0.191***	0.189***	0.189***
	(0.0241)	(0.0243)	(0.0244)	(0.0242)
Log Fundraising	0.130**	0.132**	0.139**	0.139**
+$25,000	(0.0555)	(0.0547)	(0.0533)	(0.0533)

Table 4 — Continued

D. Direct Contributions with Fundraising Regressors and Interactions

	Log Direct Contributions			
$\Delta_{86-88} TaxCost_{s(i)}$	-8.466***	-8.884***	-7.951***	-7.448***
$*Post86_t$	(2.431)	(2.377)	(1.865)	(1.958)
1[*Fundraising*]	0.136***	0.135***	0.133***	0.133***
	(0.034)	(0.033)	(0.033)	(0.033)
Log Fundraising	0.184**	0.189**	0.199***	0.199***
+$25,000	(0.073)	(0.072)	(0.071)	(0.071)
1[*Fundraising*]	0.358**	0.364**	0.367**	0.367**
$*\Delta_{86-88} TaxCost_{s(i)} *Post86_t$	(0.146)	(0.143)	(0.143)	(0.143)
Log Fundraising	-0.174	-0.219	-0.263	-0.261
$*\Delta_{86-88} TaxCost_{s(i)} *Post86_t$	(0.411)	(0.403)	(0.407)	(0.407)
Org. Effects	✓	✓	✓	✓
Year Effects	✓		✓	
Year*Region Effects		✓		✓
Macro Controls			✓	✓

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$

Notes: Dependent variable in panel A is equal to 1 if charity has strictly positive fundraising expenditure, zero otherwise. Dependent variable of panel B is the log of fundraising expenditure plus $25,000 (to retain observed zeroes). Dependent variable in panels C and D is log of direct contributions; dummy for fundraising at the extensive margin and log of fundraising expenditure plus $25,000 are added as additional control variables to panels C and D. State-clustered standard errors are in parentheses.
Sources: See notes to table 2.

Table 5: Growth Rates of Charitable Giving by Sector, 1967–2012

Sector	Average Growth (Geometric)	Average Growth (Arithmetic)	Std. Dev. Annual Growth
Religion	0.58%	0.6%	2.28 %-pts
Education	3.71	4.11	8.34
Human Services	6.45	7.04	9.57
Health	4.33	5.88	20.49
Public Interest	3.16	3.57	8.60
Art and Culture	4.04	4.44	8.00
International	7.50	8.72	14.03
Environment	6.35	6.86	8.18

Notes: Averages and standard deviations of growth from author's calculations.
Sources: Giving USA (multiple years)

Table 6: Regressions Testing Differential Tax Effects By Sector

	(1)	(2)	(3)	(4)	(5)
	Log Direct Contributions				
Major Sector	A- Culture	B - Education	E - Health	P - Human Services	T - Philanthropy
$\Delta TaxCost_s$	-3.774***	-4.493**	-0.715	-4.093***	-3.496**
$*Post86$	(1.411)	(1.809)	(1.285)	(1.450)	(1.416)
$\Delta TaxCost_{s,q}$	6.173*	3.421	-7.273***	5.260	-0.704
$*Post86 * Sector_S$	(3.342)	(2.199)	(2.803)	(3.371)	(3.523)
$Post86$	-0.914	-0.379	1.047**	-0.996	0.336
$*Sector_S$	(0.627)	(0.406)	(0.521)	(0.623)	(0.646)
Sector Joint Test	0.001***	0.000***	0.000***	0.267	0.004***

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes: Sample is identical to the one used in table 2, row A. All regressions include controls for organization fixed effects, region-by-year effects, and state-level macroeconomic variables. Additional interaction terms with sectoral indicators are reported; see specification of equation 5. "Joint test" reports p-values for the hypothesis that both sector interaction coefficients equal zero. Standard errors in parentheses are clustered by state.
Sources: See notes to table 2.

Table 7: Difference-in-Differences Estimates With Tax Rates of Top Income Groups

	(1)	(2)	(3)	(4)
	Log Direct Contributions			
$\Delta_{86-88} TaxCost_{s(i)}$	-4.450**	-5.016***	-3.990***	-3.503***
$*Post86_t$	(1.723)	(1.420)	(1.185)	(1.140)
... for bottom 90%	-3.293	-4.041**	-3.176**	-2.582*
	(2.106)	(1.980)	(1.463)	(1.395)
top 10%	-3.557***	-3.898***	-3.080***	-2.802***
	(1.062)	(0.898)	(0.781)	(0.792)
top 5%	-3.831***	-4.200***	-3.258***	-2.932***
	(1.137)	(0.976)	(0.837)	(0.874)
top 1%	-4.465**	-5.035***	-3.611***	-2.811*
	(1.879)	(1.630)	(1.326)	(1.418)
top 0.1%	-4.221	-4.240*	-2.257	-1.229
	(2.611)	(2.390)	(1.951)	(1.963)
top 0.01%	-2.035	-2.281	-0.283	0.880
	(2.798)	(2.579)	(1.969)	(2.019)
Org. Effects	✓	✓	✓	✓
Year Effects	✓	✓		
Year*Region Effects			✓	✓
Macro Controls		✓		✓

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes: TaxCost is recalculated only for households in the income fractile indicated, as measured by reported taxable income exclusive of capital gains and government transfers. State-clustered standard errors are in parentheses.
Sources: See table 2 sources. Income thresholds from updated data to Piketty and Saez (2003).

Table 8: Difference-in-Differences Estimates at Nonzero Contribution Margin

	(1)	(2)	(3)	(4)
	Log Direct Contributions			
$\Delta_{86-88} TaxCost_{s(i)}$ $*Post86_t$ at \$100	-4.049**	-4.581***	-3.903***	-3.413***
	(1.674)	(1.406)	(1.068)	(1.014)
...\$300	-4.492***	-5.157***	-4.115***	-3.649***
	(1.658)	(1.341)	(1.126)	(1.102)
\$500	-4.234**	-4.881***	-4.030***	-3.546***
	(1.666)	(1.355)	(1.065)	(1.039)
\$1000	-4.400**	-5.126***	-4.182***	-3.669***
	(1.677)	(1.321)	(1.065)	(1.069)
Org. Effects	✓	✓	✓	✓
Year Effects	✓	✓		
Year*Region Effects			✓	✓
Macro Controls		✓		✓

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes: Instead of first-dollar tax rates, tabulated elasticities are for marginal tax subsidies at a constant (nominal) dollar amount for all returns. State-clustered standard errors are in parentheses.
Sources: See notes to table 2.

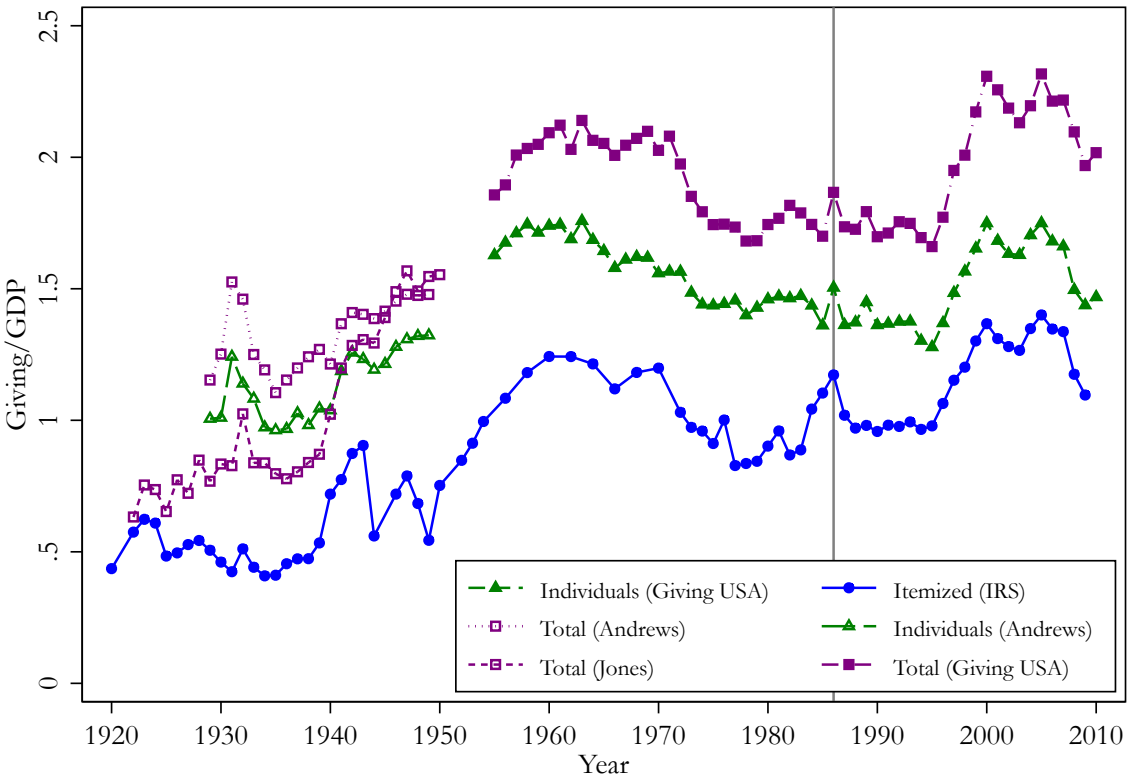
Table 9: Calculation of Counterfactual Contributions, 1985-88

	1985			1988			
Real Income Tier	Real Income ($ bil.)	Real Contrib. ($ bil.)	Contrib. / Income	Real Income ($ bil.)	Real Contrib. ($ bil.)	Contrib. / Income	1988 Income x 1985 Share Contributed
\$100-200K	1140	27.70	2.43%	1180	28.00	2.37%	28.67
\$200-500K	342	10.40	3.04%	470	12.10	2.57%	14.29
\$500-1000K	89	4.51	5.08%	184	4.50	2.45%	9.36
≥\$1000K	96	7.71	8.03%	322	10.80	3.35%	25.86
Remainder	3340	72.05	*2.16%*	3600	80.48	*2.24%*	80.48
Total	5007	122.37		5756	135.88		158.66
Change						11.04%	29.66%

Notes: All dollar values are inflated to real 2012 dollars using the Consumer Price Index. Data for high-income households is taken from the IRS public-use cross-sections of individual tax returns.
Sources: Tax return data from the IRS Public Use File. Contribution shares from Giving USA (2013).

Figures

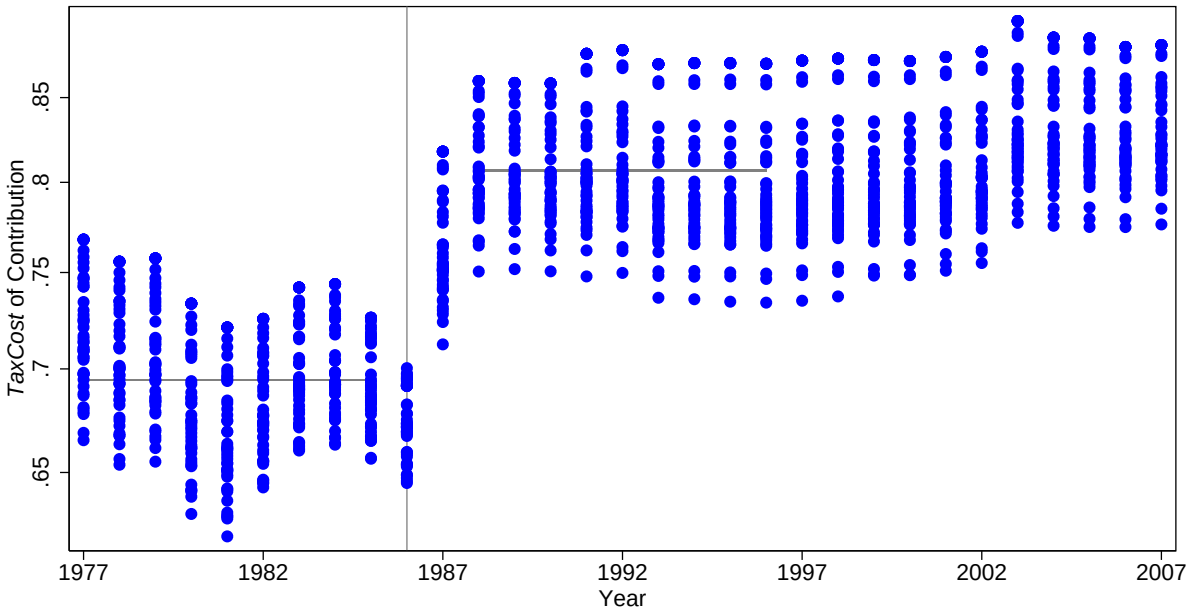
Figure 1: Charitable Contributions/GDP, 1919-2010



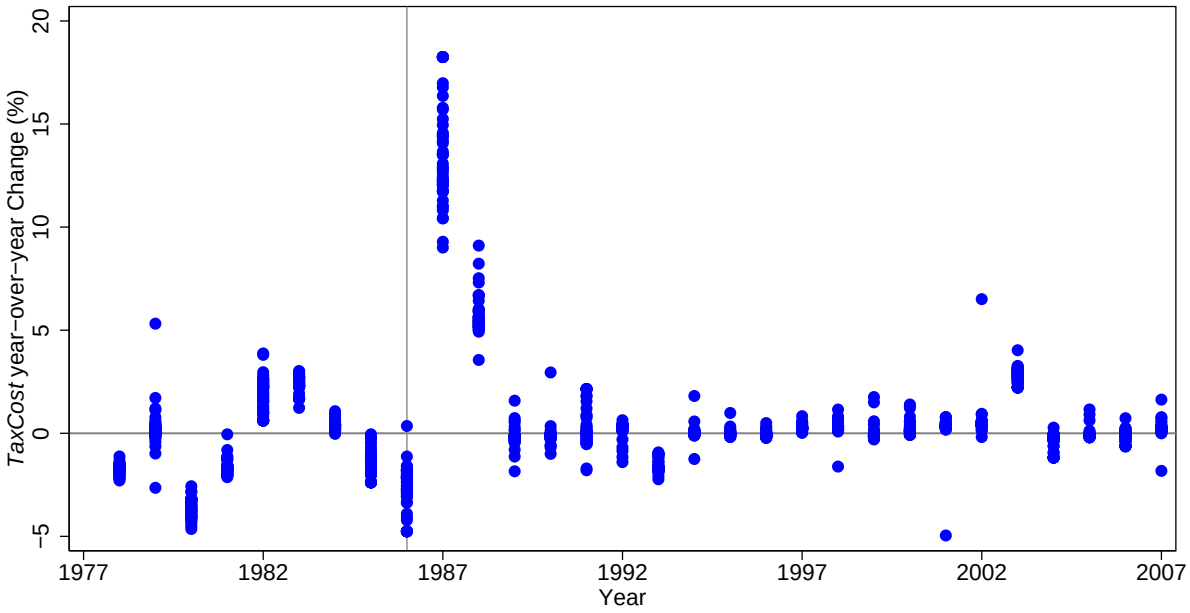
Notes: Total contributions includes charitable giving not out of living persons' income, including bequests, gifts out of foundations, and corporate contributions. Individual giving excludes estates and organizations. Itemized contributions are those claimed on an individual tax return.
Sources: Andrews (1950) estimates personal contributions for itemizers and non-itemizers from the Survey of Current Business and Statistics of Income data sets; Jones (1954) totals from Statistics of Income aggregates; Giving USA (2013) from various sources; Itemized contributions from Internal Revenue Service 2011b; nominal GDP from Bureau of Economic Analysis and from Carter et al. (2006, Table Ca9-19).

Figure 2: Tax Cost of Giving by State

A. Tax Price by State and Year

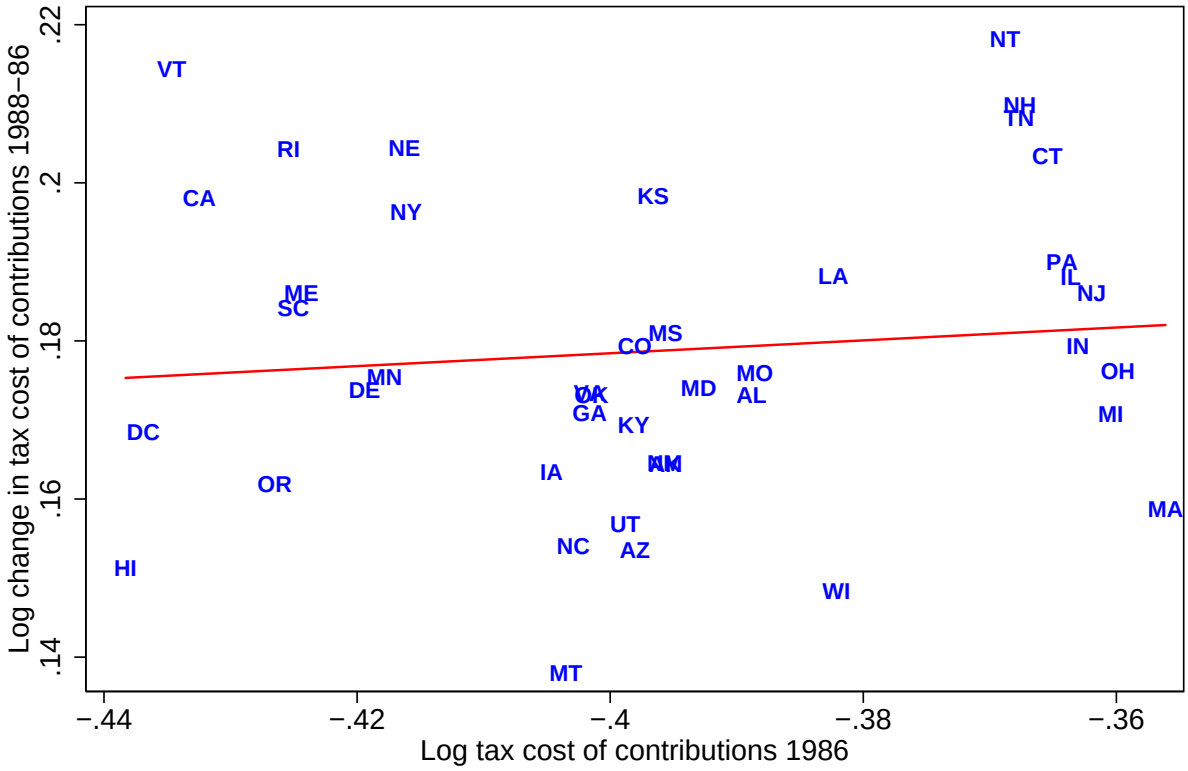


B. Change in Tax Price by State and Year



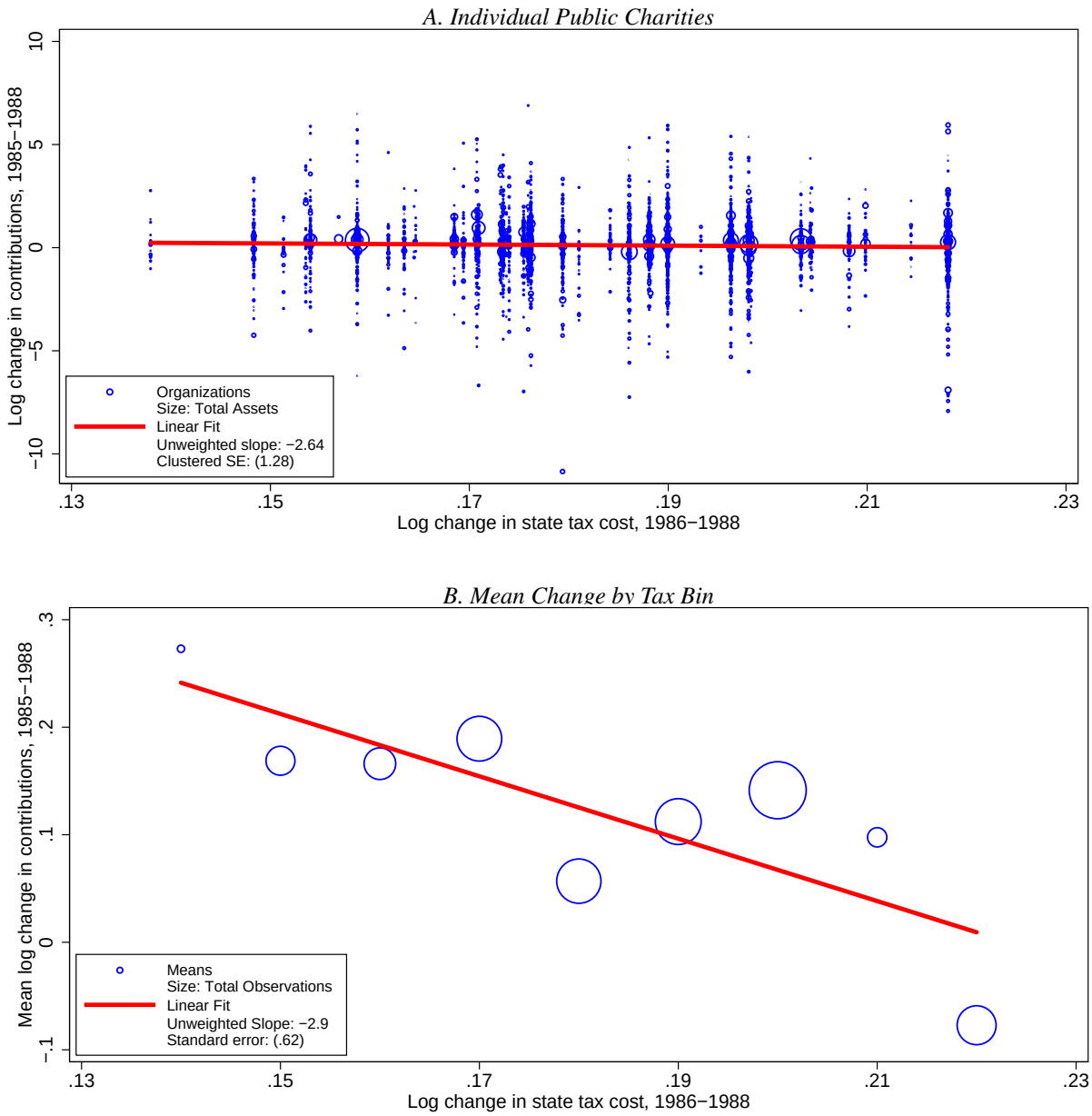
Notes: Each dot in panel A represents the tax cost of giving, averaged over a fixed sample of returns, in one state in one year. Each dot in panel B represents the year-over-year percentage change in tax cost. Tax cost of giving is calculated using the NBER TAXSIM calculator for a nationally representative cross-section of 1984 tax returns and weighted by reported contributions. See appendix A for details of the calculation. Vertical lines in both panels mark year 1986. Horizontal lines in panel A mark simple averages of all plotted points over periods 1977–1985 and 1988–1996. A horizontal line in panel B marks zero change in tax cost.
Source: Internal Revenue Service, Individual Public Use Tax File.

Figure 3: Change in Tax Price vs. pre-TRA86 Tax Price



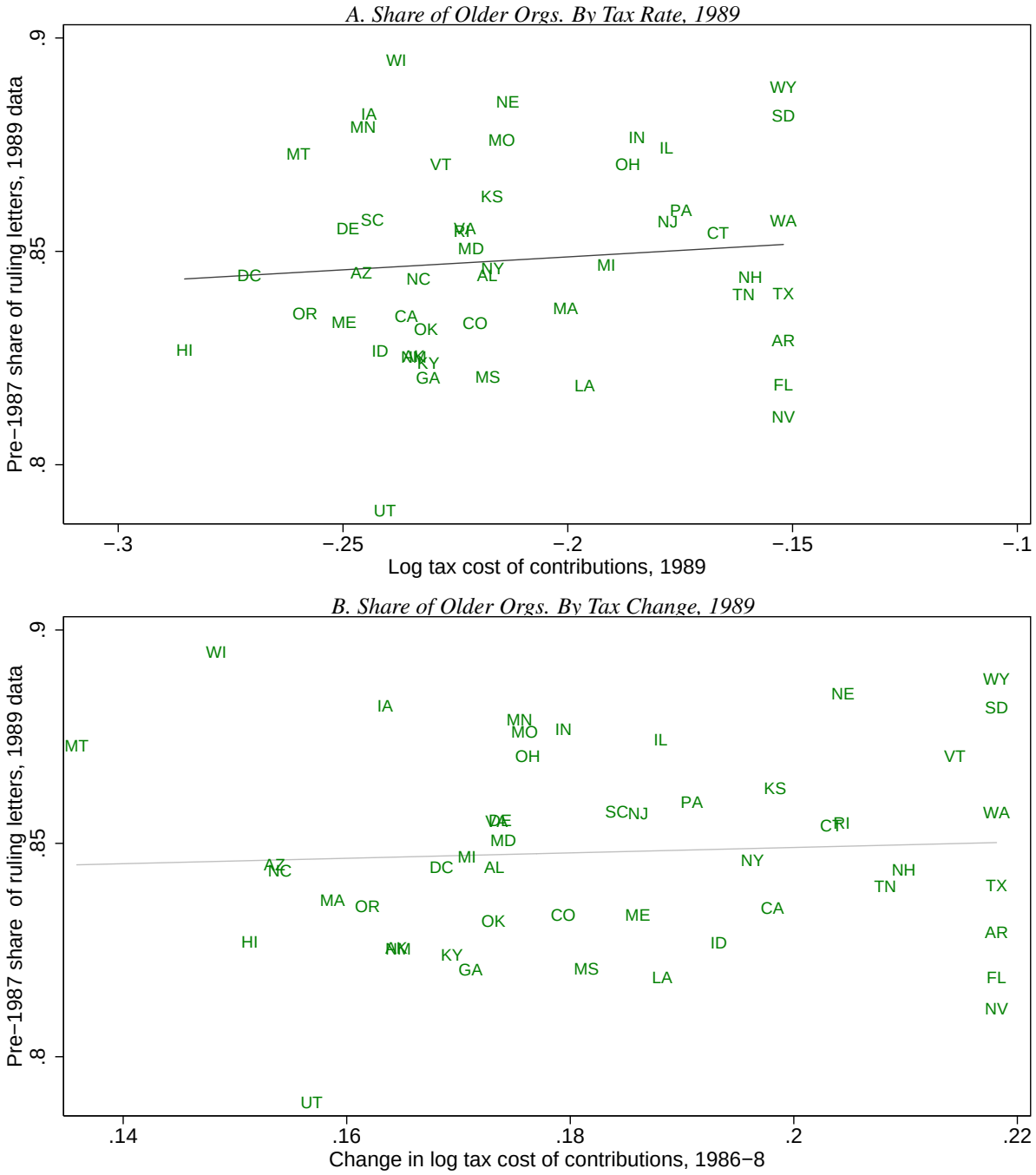
Notes: Each point represents total change in a measure of average tax cost of giving for one state income tax policy. The point labeled "NT" represents states with no state income tax. All other points are labeled using state postal abbreviations. The horizontal axis plots the log average cost of giving in 1986 *TaxCost*. The vertical axis plots change in log tax cost of giving from 1986 to 1988 (ln($TaxCost_{1988}$)-ln($TaxCost_{1986}$)). A line plots the least-squares fit through the plotted points. See appendix A for a precise description of the tax cost variable's calculation.
Source: Internal Revenue Service, Individual Public Use Tax File.

Figure 4: 1985-8 Change in Contributions vs. Change in Tax Price



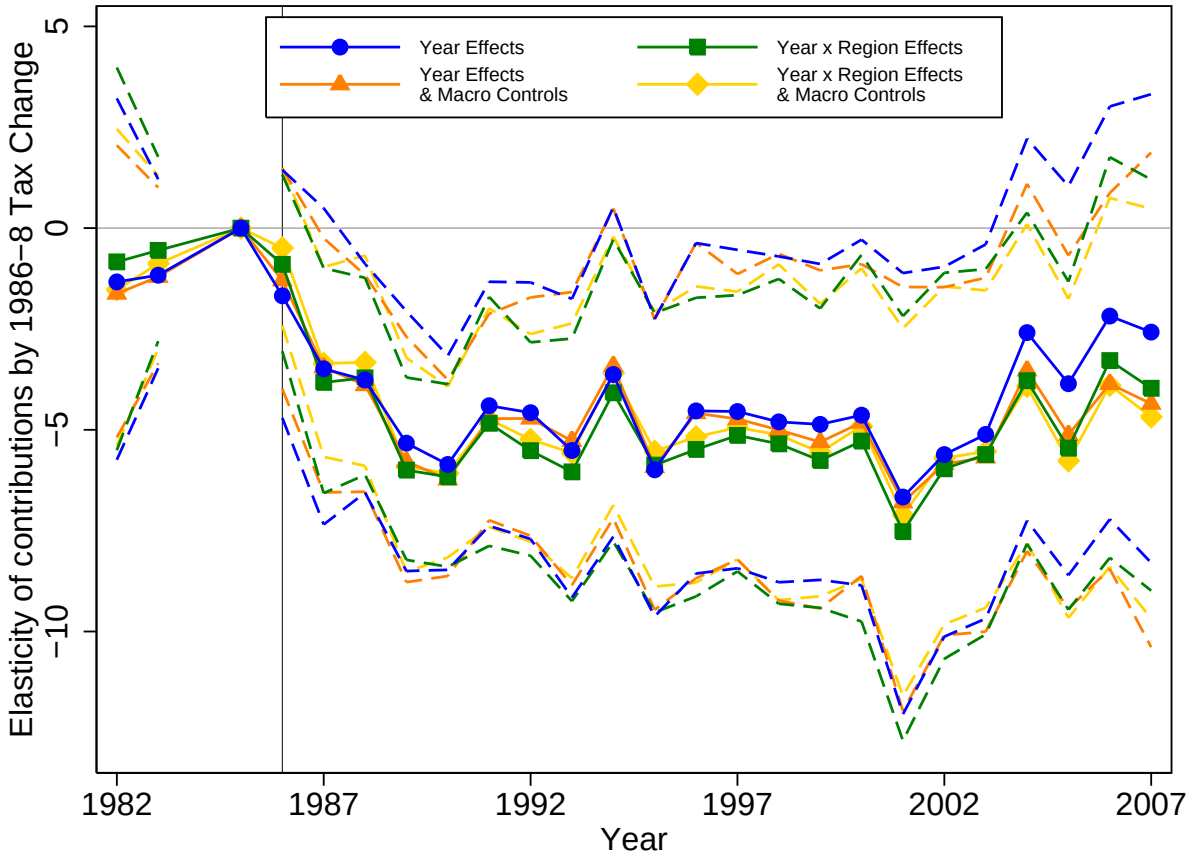
Notes: Figure 4A plots the log change direct public support for individual public charities from 1985 to 1988 (on the vertical axis) against the log change in average tax cost of a charitable contribution from 1986 to 1988 (horizontal axis). Blue markers represent individual charities and are scaled by gross assets at the end of fiscal 1988. A red line marks the unweighted linear fit through the plotted charities. Figure 4B aggregates the data from panel 4A for easier display. Blue circles represent the unweighted mean of log tax changes for all the organizations in states with log tax changes closest to even hundredths. (That is, bins are 0.14 ± 0.05, 0.15 ± 0.05, …, 0.22 ± 0.05.) Blue marker size represents total observations by tax bin.
Sources: Direct public support data are taken from the 1985 and 1988 Statistics of Income Form 990 data set; all charities reporting strictly positive contributions in both years and filing in states other than North Dakota and West Virginia are plotted. State tax change data are described in notes to figure 3 and in appendix A.

Figure 5: Exemption Letter Share as Test of Entry and Exit



Notes: Both vertical axes plot the share of charities in the 1989 IRS Core PC Files with tax exemption letters data 1986 or earlier. In panel A, the horizontal axis plots the log of state average tax cost of giving in 1989. In panel B, the horizontal axis plots the change in state average tax cost of giving from 1986 to 1988. Points are labeled using state postal abbreviations. Lines mark the least-squares fit through plotted points.
Sources: See notes to table 2.

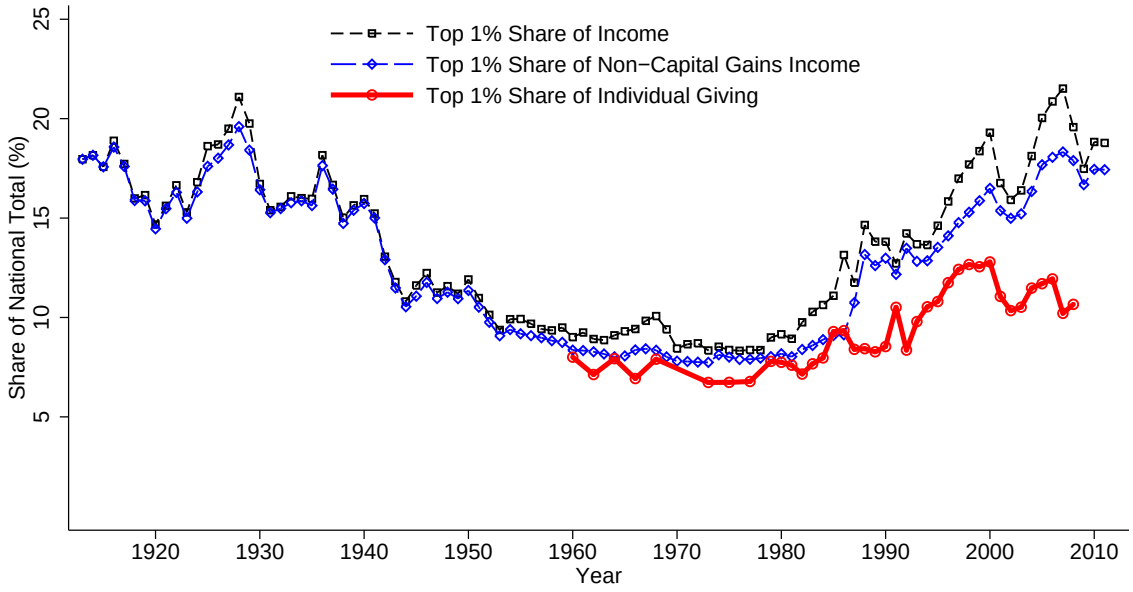
Figure 6: Time-varying Estimates of Tax Change Effects



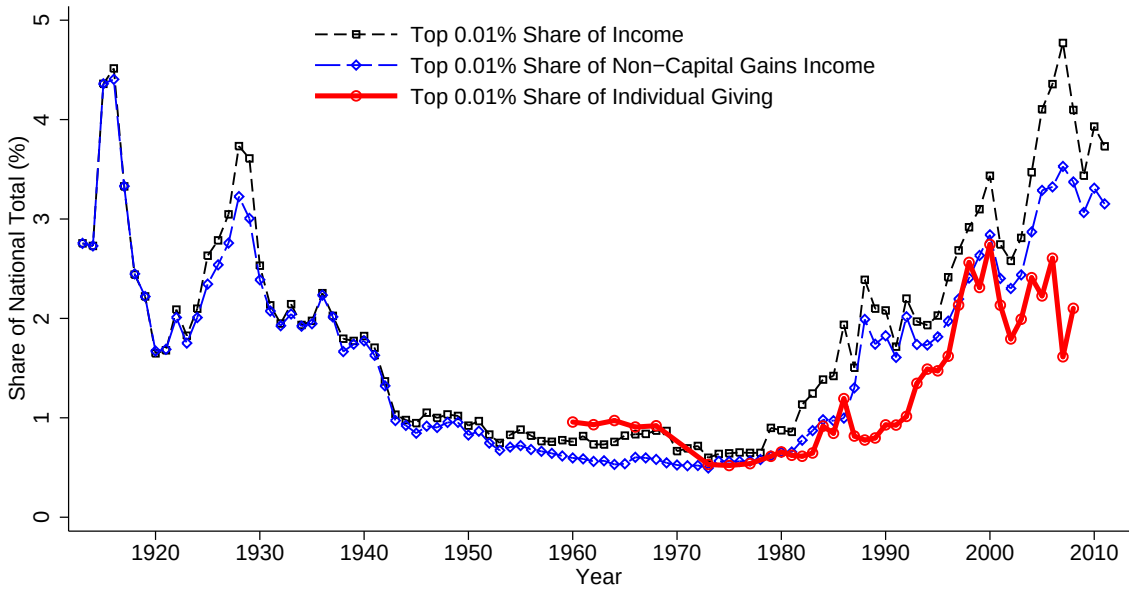
Notes: Y-axis is the coefficient on the 1986–1988 change in log average tax cost by state for year t. Comparison (omitted) year is 1985. Dashed lines plot pointwise 95% confidence intervals using state-clustered standard errors. See discussion of regression equation 3 for more detail.
Sources: See notes to table 2.

Figure 7: Income and Giving Shares of High-Income Households

A. Top 1% of Households' Shares of National Incomes and Charitable Giving



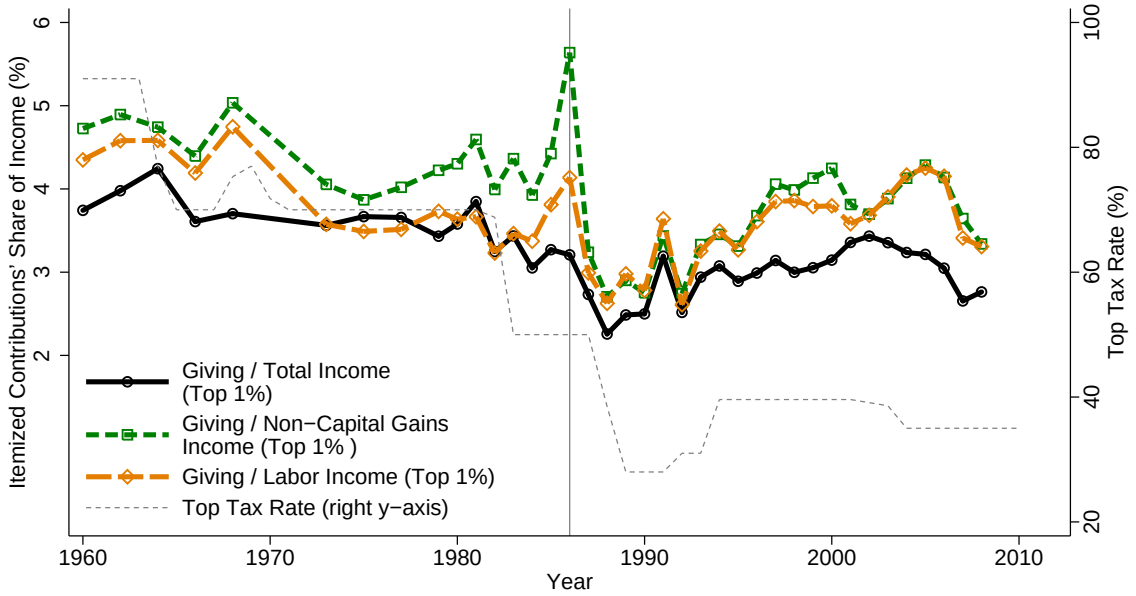
B. Top 0.01% of Households' Shares of National Incomes and Charitable Giving



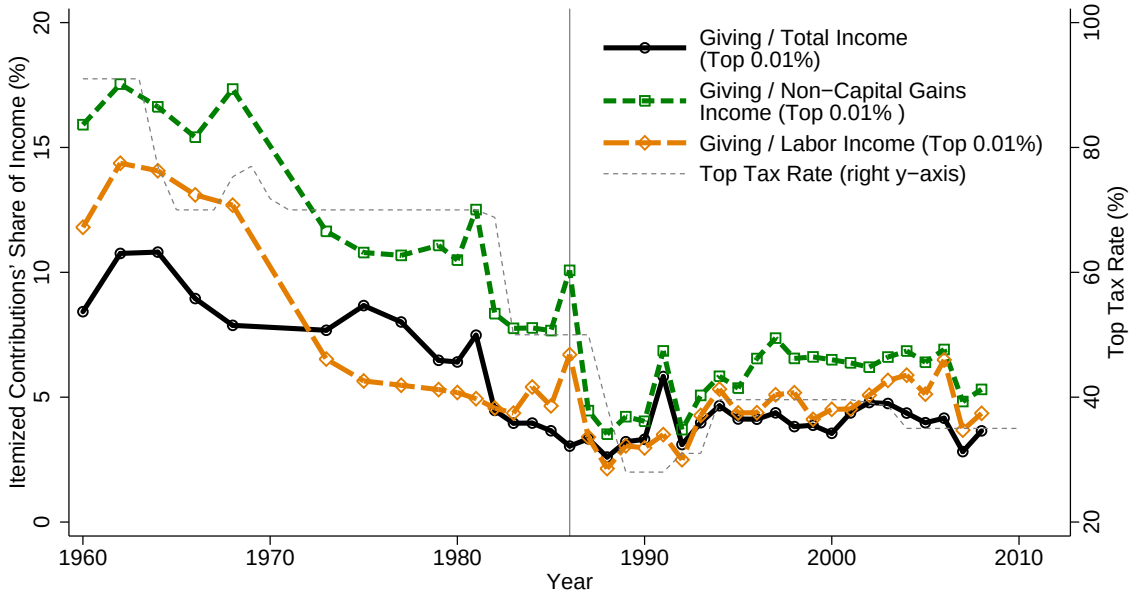
Notes: Share of Individual Giving is calculated by taking the sum of all itemized contributions by all households with non-capital gains income above of Piketty and Saez's (2003) nominal thresholds each year, and dividing by total individual contributions from Giving USA. Top shares of income are taken directly from Piketty and Saez.
Sources: Tax return data are from the IRS Public Use File maintained by the National Bureau of Economic Research. Aggregate giving estimates are from Giving USA (2013). Income shares are from Piketty and Saez (2003).

Figure 8: Share of Income Contributed by High-Income Households

A. Top 1% Households' Giving/Income Ratio



B. Top 0.01% Households' Giving/Income Ratio



Notes: Ratio of giving to income is the sum of all itemized contributions divided by sum of particular sources of income for all households with incomes above Piketty and Saez's (2003) nominal thresholds each year. The thresholds for the top percentiles of all non-capital gains income and for only wage income differ, so the set of tax returns in the top fractiles for the different income definitions are not identical (which is why the giving/income ratio can be lower for labor income only than for labor plus other income sources).
Sources: Tax return data are from the IRS Public Use File maintained by the National Bureau of Economic Research. Percentile thresholds of nominal income taken from Piketty and Saez (2003), data updated 2013. Total individual giving from Giving USA (multiple years).

A Data Appendix

IRS/NCCS 990 Data

The IRS form 990 data is taken from the IRS Statistics of Income micro data, as cleaned and documented by the Urban Institute's National Center for Charitable Statistics (NCCS). This is a detailed data set including most data items on the form 990. The data are tiered by asset classes, including 100% of the largest organizations and decreasing shares of smaller organizations by total assets, with thresholds for asset size varying a little bit each year; however, the same small organizations tend to be observed each year of the panel, indicating that these are *not* cross-sections selected by stratified random sampling but that the IRS has tried to make a somewhat balanced panel with extra weight on the largest organizations.

The NCCS variable names of 990 data used are tabulated in table A1.

Sample Selection Process

The data starts with the full IRS public charity data, which includes 296,318 observations on 31,779 different organizations in years 1982, 1983, and 1985-2007, altogether accounting for $1,388 billion in direct contributions over the period (in 2012 dollars). The sample is refined by taking the following steps:

1. Discard all observations except for years 1982, 1983, 1985 and 1988–1990; only keep observations on organizations observed both before and after the 1986 reform. (Remaining: 24,561 Obs, 4,673 Orgs, $157.4 billion direct contributions.)

2. Discard organizations located in West Virginia (which repeals its contribution deduction in 1987) or North Dakota (which reports incorrect marginal tax rates in TAXSIM in 1986).[40] Remaining: 24,326 Obs, 4,632 Orgs, $157.0 billion direct contributions.

3. Discard organizations meeting any of several criteria suggesting they might have donors outside their filing state.

[40]For 22.0 percent of sampled returns, TAXSIM computes a state marginal tax rate in North Dakota greater than 50 percent in 1986. This is true for less than 0.0007 percent of observed returns in the other 49 states and DC, and because the same calculations are not observed after the TRA86, these high rates lead to a very large calculated change in North Dakota's cost of giving from 1986 to 1988. In 1986, North Dakota taxpayers could choose between a progressive rate schedule with a top marginal rate of nine percent, or a "piggyback" payment equal to 10.5 percent of federal income tax (ACIR 1987, table 51). Because the top federal rate in 1986 was 50 percent, high earners should not have faced North Dakota marginal rates greater than 5.25 percent (0.105 * 0.50), and certainly nobody should have been subject to marginal rates over nine percent. The cause of these high calculated marginal rates in North Dakota is not clear.

(a) Organizations that change filing state at any time across all years in the IRS Statistics of Income (SOI) or Core data files files are presumed to provide non-local goods and are dropped. Remaining: 22,927 Obs, 4,356 Org, $140.4 billion direct contributions.

(b) Organizations which ever file a "group return" on behalf of a network of affiliated organizations are presumed to have branches in other states and are dropped. Remaining: 22,834 Obs, 4,356 Orgs, $138.6 billion direct contributions.

(c) Organizations whose names or form 990 mission statements match key words implying a non-local orientation are dropped. These words are:

- "Global"
- "National" or "International"
- "World"

Remaining: 20,102 Obs, 3862 Orgs, $106.6 billion direct contributions.

(d) If an organization is ever among the 25 largest organizations by assets within its major sector (as classified by the National Taxonomy of Exempt Entities), it is assumed that it is nationally prominent and omitted from the sample. Remaining: 19,120 Obs, 3,684 Orgs, $74.5 billion direct contributions.

4. Finally, since the dependent variable is in logs, organizations that ever report zero direct contributions in the observation period are omitted. The overwhelming majority of charities either always receive contributions, or never do. The few that vary year to year are omitted so their patterns of occasional gifts do not introduce observation error. The final sample contains 16,882 observations on 3,273 organizations, comprising $72.1 billion direct contributions in 2012 dollars.

Distribution of Charities by Sector

The 990 data is not necessarily representative of charities generally. Several major sectors, particularly churches and houses of worship, private foundations, and government-sponsored charities (*e.g.* public universities) do not file the form 990. Furthermore, some sectors are likelier to be eliminated by the sample selection process than others — for example, foreign aid groups are all all but eliminated by the filter dropping groups with globally focused mission statements. The number of charities and observations in the main sample is tabulated by top-level National Taxonomy of Exempt Entity (NTEE) code in table A2.

The After-Tax Cost of Charitable Giving

The tax cost of giving measure used in this paper is created by estimating a first-dollar marginal cost of giving cash for a constant set of individual tax returns, indexed for inflation and calculated for each state in each year. The only change in the measure is therefore in state and federal laws.

The process starts with the IRS Public Use File for 1984, a cross-sectional sample of 79,556 individual income tax returns for that year. For each state s and year t from 1979 to 2007, (1) replace the year variable (`data103`) with year value t; (2) replace the state variable (`data6`) with numeric state code s; (3) replace variables for cash contributions (`data58`), gifts of appreciated assets (`data59`) and carryover contributions (`data60`) with zero values; and (4) use the Consumer Price Index to adjust all other money variables from year-1984 dollars to year-t dollars. This modified data set is fed into the `taxpuf9` FORTRAN program, which calculates the federal and state tax income tax for each return i — call them $Federal^0_{i,s,t}$ and $State^0_{i,s,t}$. The calculation is then repeated, changing only the value of cash contribution to \$10. The individual's tax cost of giving is calculated as the change in total income tax liability:

$$TaxCost_{ist} \equiv \frac{\left(Federal^0_{i,s,t} + State^0_{i,s,t}\right) - \left(Federal^{10}_{i,s,t} + State^{10}_{i,s,t}\right)}{10} \tag{6}$$

For a small number of observations, the implied marginal rate can be very large. $TaxPrice_{ist}$ is censored above at a marginal rate of 100% and below at 0% before aggregating.

The state-year-level tax cost is then calculated by taking a mean weighted by sampling weight (`data1`) and reported contributions (`data58+data59+data60`).[41]

$$TaxCost_{st} = \frac{\sum_i \texttt{data1}_i * (\texttt{data58}_i + \texttt{data59}_i + \texttt{data60}_i) * TaxCost_{ist}}{\sum_i \texttt{data1}_i * (\texttt{data58}_i + \texttt{data59}_i + \texttt{data60}_i)} \tag{7}$$

The difference-in-differences analysis ultimately relies on the change implemented by the TRA86, taken as the log difference in *TaxCost* from 1986 (when the law was passed) to 1988 (when it was fully implemented): $\ln(TaxCost_{1988,s}) - \ln(TaxCost_{1988,s})$. This log change variable is tabulated for each state in table A3. Figure A1 maps the distribution of this variable by state, and demonstrates that there is not a strong geographic pattern to the measured change.

[41] Because there was an above-the-line contribution in 1984, non-itemizers had an incentive to report their contributions in the 1984 tax return data. Weighting by reported contributions will be incorrect to the extent that contributions are misreported.

Mission Statements

Form 990 mission statements are looked up by searching the Guidestar database (`www.guidestar.org`) for each employer identification number (EIN) of organizations in the sample. Of the 4,356 EINs attempted, 3,984 had retrievable mission statements; 363 were in the Guidestar database but had no recorded statement; 315 were not in the Guidestar database.

Macroeconomic Data

All regressions include in some specifications a set of logged macroeconomic variables observed at the state-year level, intended to capture time-varying changes in the resources of possible donors and the demands on charity services perhaps not captured by fixed effects.

Macroeconomic variables from Federal Reserve Economic Data (FRED) include population [series code POPx], unemployment rate [URx], and per capita income [PCPIx], where x is the two-letter postal abbreviation of each US state.

Gross state product data are from the U.S. Bureau of Economic Analysis's U.S. Economic Accounts: Regional: GDP by State and Metropolitan Area:Gross Domestic Product by State:Gross Domestic Product:All Industries. The data were extracted as two separate files, one for 1997 following the SIC breakdown of industries, and one from 1997 onward following the NAICS system, and the two merged together. Because only total product was of interest, the change in classification schemes was not relevant.

State-by-year poverty rates are aggregated from March Current Population Survey microdata, as maintained by the Integrated Public Use Microdata Series (King et al. 2010). State-year poverty rates were calculated using weighted shares of households in each state below 100% of the poverty line, as observed in the `POVERTY` variable.

Aggregate Giving

Annual estimates of total US charitable contributions are from the tables in Giving USA (2013), section 18. Because the 2013 edition of Giving USA only tabulates annual data since 1972, earlier years have been entered from older editions of Giving USA with earlier series start dates. Consistent time series were obtained by verifying that 1972 numbers were identical across editions.

Prewar estimates of total giving before 1950 are hand-entered from Jones (1954) and Andrews (1950).

These totals are divided by BEA GDP where available. Pre-1929 estimates are taken from the *Historical Statistics Of the United States Online*, table Ca9-19.

Total annual contributions itemized on federal tax returns is taken from the IRS Statistics of Income, "Individual Income Tax: Itemized Charitable Contributions, by Size of Adjusted Gross Income, 2009-1917," compiled into an aggregate historical time series by the Urban Institute and posted online (Internal Revenue Service 2011b).[42]

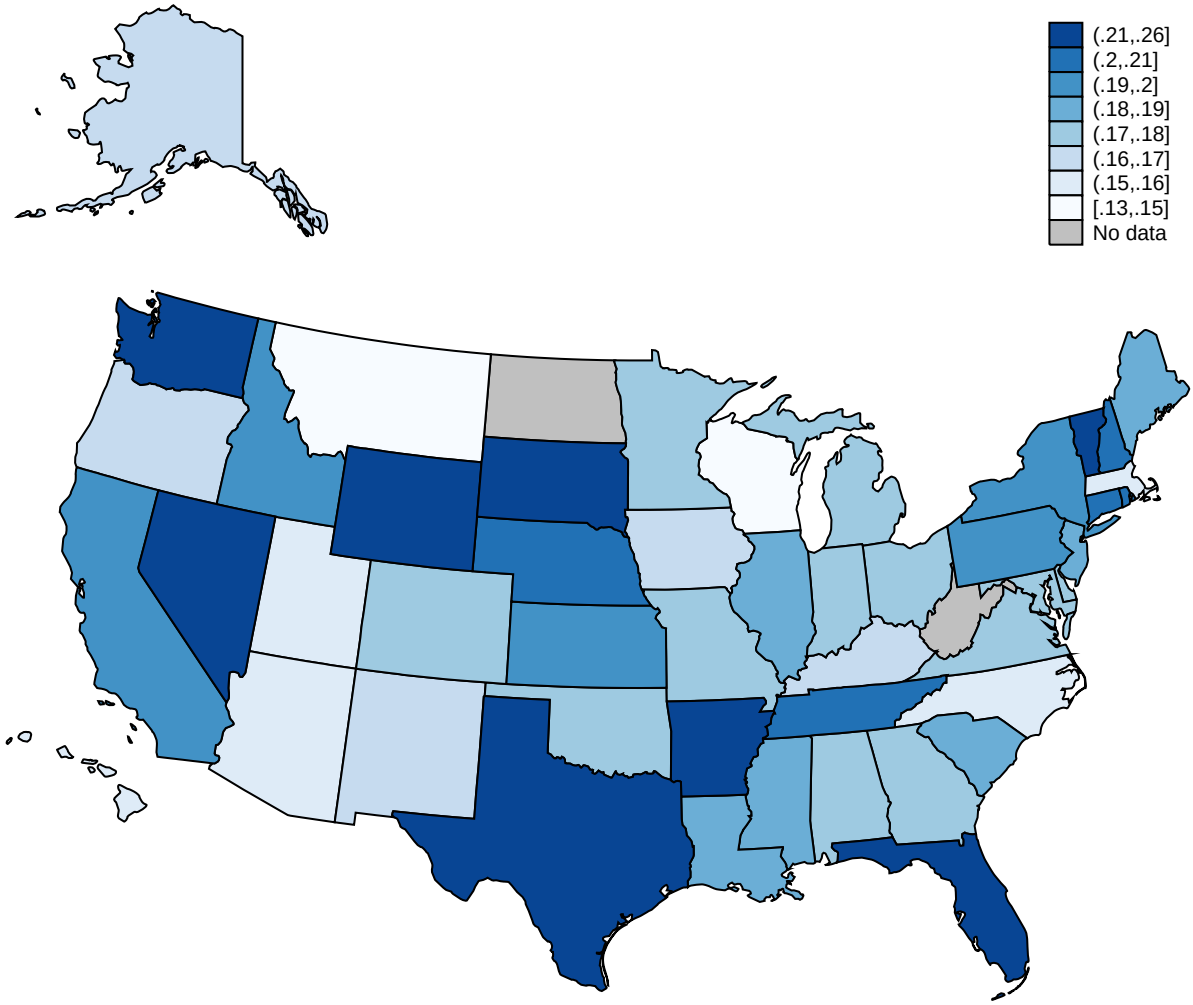
High-Income Households

Both income shares and nominal income thresholds of high-income household percentiles are taken from the 2013 update to Piketty and Saez (2003), available at Emmanuel Saez's web site.[43] Data on nominal income thresholds are taken from sheet `Table Thresholds_nominal`. Data on income shares are taken from sheets `Table A1` (top income shares excluding capital gains), `Table A2` (including capital gains) and `Table B2` (top labor income shares).

Income thresholds were used to compute ratios of high-income households' giving to their incomes and to national giving totals from IRS tax return micro data. The contributions of each household were taken as the sum of current-year itemized cash and non-cash contributions. Virtually all high-income households were eligible to take itemized deductions in all periods, making any risk of underreporting small. Various categories of income were aggregated and observations with totals below Piketty and Saez's nominal thresholds dropped. Total contributions and total incomes for these groups were then calculated by taking a sum weighted by sample weights.

[42] `http://www.urban.org/taxandcharities/upload/SOI_CharitableData_Yearly_Totals-2.pdf`
[43] `http://eml.berkeley.edu/~saez/TabFig2012prel.xls`.

Figure A1: Tax Cost Treatment Variable by State



Note: Darker states had greater increase in the log average cost of a charitable contribution from 1986 to 1988.
Source: See appendix A for details of the calculation of the average tax cost variable.

Table A1: Form 990 data items by NCCS variable code

	Statistics of Income			Core Files
	Form 990	All Forms 990	Form 990EZ	
	1982-1999	2000-2007	1992-1999	1989-2007
Employer Identification Number	ein		ein	ein
Organization Name	name		name	name
State	state		state	state
Primary Metropolitan Area	pmsa		pmsa	pmsa
Major Subsector (NTEE)	ntee1		ntee1	ntee1
Major Subsector (12 groups)	ntmaj12		ntmaj12	ntmaj12
Direct Contributions	e021	r010	--	--
Total Assets, End of Year	e178	a180	ez48	ass_eoy
Fundraising Expenditure	e050	x030	--	solicit
Filed Group Return	e012	cond	--	frcd
IRS exemption letter date	--	--	--	ruledate

Table A2: Distribution of Charities by Sector

NTEE Sector	Example	Orgs.	Obs.
A - Arts, Culture, and Humanities	San Diego Museum of Art	182	824
B - Education	Hendrix College	1027	4984
C - Environmental Quality, Protection, and Beautification	Aspetuck Land Trust	18	81
D - Animal-Related	Humane Society of Marin County	15	60
E - Health	Children's Medical Center of Dallas	1390	6860
F - Mental Health, Crisis Intervention	Philadelphia Psychiatric Center	46	197
G - Diseases, Disorders, Medical Disciplines	Dana-Farber Cancer Institute	14	72
H - Medical Research	Hermann Eye Fund	33	157
I - Crime, Legal Related	Mass. Society for Prevention of Cruelty to Children	14	65
J - Employment, Job Related	Blind Industries and Services of Maryland	15	65
K - Food, Agriculture, and Nutrition	Jackson County Meals Service	3	16
L - Housing, Shelter	Presbyterian Retirement Homes of Birmingham	25	116
M - Public Safety	Tacoma Mountain Rescue	5	16
N - Recreation, Sports, Leisure, Athletics	The Fresh Air Fund	18	81
O - Youth Development	Boys and Girls Clubs of Metro Atlanta	26	131
P - Human Services - Multipurpose and Other	YWCA of Walla Walla	428	2047
Q - International, Foreign Affairs, and National Security	Asia Foundation	3	13
R - Civil Rights, Social Action, Advocacy	Anti-Defamation League	1	6
S - Community Improvement, Capacity Building	Junior League of Detroit	12	49
T - Philanthropy, Voluntarism, and Grantmaking Foundations	United Way of Santa Clara County	165	808
U - Science and Technology Research Institutes, Services	University City Science Center	18	87
V - Social Science Research Institutes, Services	Center for Advanced Study in the Behavioral Sciences	2	10
W - Public, Society Benefit - Multipurpose and Other	Hebrew Free Loan Association of San Francisco	7	35
X - Religion Related, Spiritual Development	Upper Peninsula Bible Camp	23	98
Y - Mutual/Membership Benefit Organizations, Other	Lower Marion Township Police Pension Association	1	4
Total		3491	16882

Notes: Tabulation by sector for main sample.
Source: NCCS Statistics of Income.

Table A3: Change in Average Tax Cost of Giving by State, 1986 to 1988

State	Tax Rate		Log Diff.	State	Tax Rate		Log Diff.
	1986	1988	1986–8		1986	1988	1986–8
Alabama	32.2%	19.4%	0.173	Montana	33.2%	23.3%	0.138
Alaska	32.7%	20.6%	0.164	Nebraska	34%	19.1%	0.204
Arizona	32.8%	21.7%	0.154	Nevada	30.8%	14%	0.218
Arkansas	30.8%	14%	0.218	New Hampshire	30.8%	14.6%	0.21
California	35.1%	20.9%	0.198	New Jersey	30.4%	16.1%	0.186
Colorado	32.8%	19.6%	0.179	New Mexico	32.7%	20.6%	0.165
Connecticut	30.6%	15%	0.203	New York	34%	19.7%	0.196
Delaware	34.3%	21.8%	0.174	North Carolina	33.2%	22%	0.154
District of Columbia	35.4%	23.5%	0.168	North Dakota*	37.6%	19%	0.261
Florida	30.8%	14%	0.218	Ohio	30.2%	16.8%	0.176
Georgia	33.1%	20.6%	0.171	Oklahoma	33.1%	20.4%	0.173
Hawaii	35.5%	24.9%	0.151	Oregon	34.7%	23.3%	0.162
Idaho	35.1%	21.3%	0.193	Pennsylvania	30.5%	16%	0.19
Illinois	30.5%	16.1%	0.188	Rhode Island	34.6%	19.8%	0.204
Indiana	30.4%	16.8%	0.179	South Carolina	34.6%	21.4%	0.184
Iowa	33.3%	21.4%	0.163	South Dakota	30.8%	14%	0.218
Kansas	32.7%	18%	0.198	Tennessee	30.8%	14.7%	0.208
Kentucky	32.8%	20.4%	0.169	Texas	30.8%	14%	0.218
Louisiana	31.8%	17.6%	0.188	Utah	32.9%	21.5%	0.157
Maine	34.6%	21.2%	0.186	Vermont	35.2%	19.8%	0.214
Maryland	32.5%	19.7%	0.174	Virginia	33.1%	20.4%	0.173
Massachusetts	30%	17.9%	0.159	Washington	30.8%	14%	0.218
Michigan	30.3%	17.3%	0.171	West Virginia†	34.2%	17.2%	0.23
Minnesota	34.2%	21.5%	0.175	Wisconsin	31.8%	20.8%	0.148
Mississippi	32.7%	19.3%	0.181	Wyoming	30.8%	14%	0.218
Missouri	32.2%	19.2%	0.176				

Notes: * North Dakota calculates impossibly high marginal rates pre-1986 and is dropped. † West Virginia repeals its contribution deduction in 1987 and is dropped.

Table A4: TAXSIM IRS Public Use Data Variables Used

Variable Name	Definition
Contribution Variables	
data58	Cash contributions following 1973; All contributions 1960–1972.
data59	Non-cash contributions following 1973
data60	Carryover contributions
Labor Income	
data11	Wages and Salaries
Non-Capital Gain, Non-Labor Income	
data14,data41	Interest Income
data23	Alimony
data17	Schedule C Income
data72 , data73, data74, data75, data76 , data77, data78, data79	Schedule E income
data20	Pensions and annuities
data21	Farm income
data82	Unemployment
data22	State income tax refund
data24	Other Income (computed residual changes year to year)
Capital Gain Income	
data68	Short-term capital gain
data70	Long-term capital gain
data71	Gain from sale of principal residence, 1981-1992

B Additional Results Appendix

This appendix presents additional regressions which were cut from the main text for brevity.

Median State Change as Treatment/Control Divide

The continuous difference-in-differences specification used in this paper implicitly assumes a log-linear relationship between change in the tax cost and change in contributions. This assumption can be relaxed somewhat by splitting states by tax change into "treatment" and "control" groups and comparing across the two. The downside of this alternative specification is the loss of information within the state groups.

Above- and below-median state treatment groups are used to conduct a difference-in-difference analysis of individual nonprofits. This is done by estimating

$$\ln(Contributions_{it}) = \alpha_i + \beta D86_{s(i)} * Post86_t + \delta_t + \mathbf{X}'_{\mathbf{st}}\boldsymbol{\gamma} + \varepsilon_{it} \tag{8}$$

where $Contributions_{it}$ is real direct contributions reported by organization i in year t; δ is a year or region-by-year effect; $D86$ is equal to 1 (0) if state $s(i)$ has tax price change above (below) median for 1986-8; *Post86* is equal to 0 for years 1982-3 and 1985 and equal 1 for years 1988-2007; α_i is an organization fixed effect. The coefficient of interest is β, which captures the difference in contributions between states with above- versus below-median changes in tax price following the TRA86.

The results of this regression are reported in table B1. For the basic version of the regression, reported in column 1, organizations located in state with an above-median tax cost increase receive about 14% lower direct contributions than organizations in states with below-median increases. The size of this gap is even larger when we add region-by-year effects (-20%, column 2), state-year macro variables (-15%, column 3) or both (-16%, column 4). All of these estimates are statistically different from zero at the 5% level using state-clustered standard errors. The mean log difference in tax cost across states is 0.03, which means these estimates translate into an elasticity of contribution receipts with respect to average tax cost of -4 to -5, consistent with the magnitudes in table 2. (That is, a one percent increase in the average tax cost is associated with about a four percent decline in contribution receipts.)

Tabulated Estimates of Time-Varying TRA86 Treatment Effects

The main text describes the use of time-varying coefficients over a long sample to simultaneously check for confounding pretrends and strategic shifting behavior. (See equation 3.) Those estimates are suppressed for brevity but presented here; table B2 reports the time-varying estimates plotted in figure 6.

Regressions with Zeroes

As a check for the importance of the extensive margin, table 2 row G presents regression results with an expanded sample of charities and a dependent variable redefined as the log of direct contributions plus $25,000. As footnote 32 explains, the addition of a small dollar amount before logging is inappropriate because charities' received donations, when they do receive donations at all, are much larger dollar amounts than are declared on itemizers' tax returns. This section demonstrates that the choice of $25,000 as an additive constant is not driving the obtained results.

Table B3 presents estimates using $10,000 and $50,000 in addition to $25,000. Regardless of the constant used, the obtained point estimates are qualitatively similar to those in table 2 and are statistically significant a the 10% level. Column 4 further presents results for the main sample (that is, without including observed zeroes) but with the addition of $25,000, to check to what extent the added constant is distorting the estimated magnitudes. An elasticity of -3.8 slightly exceeds the estimate of -3.5 obtained with the main sample, but is qualitatively similar.

Last Year Observed

Figure 5B checks for the importance of organization entry and exit using state shares of pre-1986 IRS exemption letters as a proxy for post-1986 organizational turnover. This section provides additional microdata analysis using a proxy measure for organization exit, and similarly finds no strong relationship to tax incentives.

Let $LastOb_i$ be the last year up to 2007 in which organization i is observed in the Statistics of Income or Core Files data sets; though failure to observe an organization does not mean it has disappeared, a recorded 990 almost certainly means it still exists. Therefore the last year of observation should be highly (negatively)

correlated with date of exit. For organizations observed in the 1986 Statistics of Income data, regress

$$LastOb_i = \alpha + \mathbf{X_i'}\boldsymbol{\gamma} + \beta \ln(TaxCost_{s(i),\text{`86}}) + \delta\Delta_{86-88}TaxCost_{s(i)} + \varepsilon_i \tag{9}$$

where $\mathbf{X_i'}$ is a vector of organization i's financial variables, and the tax variables capture both the rate before the 1986 tax reform and the TRA86 state level tax change. The results of this regression are presented in table B4. Though income and assets are associated with a later end date, there is no significant association between last observation year and tax rates.[44] In summary, there does not seem to be a strong association between the TRA86 tax change and organization entry and exit.

Table B1: Difference-in-Difference (at Median)

	(1)	(2)	(3)	(4)
	Log Direct Contributions			
$D86_{s(i)} * Post86_t$	-0.141**	-0.202***	-0.147***	-0.155***
	(0.0632)	(0.0593)	(0.0449)	(0.0463)
Org. Effects	✓	✓	✓	✓
Year Effects	✓		✓	
Year*Region Effects		✓		✓
Macro Controls			✓	✓
Observations	16882	16882	16882	16882
R-squared	0.861	0.862	0.862	0.862
Number of Orgs	3273	3273	3273	3273

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes and Sources: See table 2.

[44]The channel through which income and asset variables are related to last observation year is ambiguous; organizations with more money are presumably less likely to exit for financial reasons, but are also more likely to be required to meet Form 990 filing requirements each year. It is likely that both causes are important.

Table B2: Tabulated Estimates of Time-Varying Treatment Effects

1982	0.418	0.416	0.736	0.416
	(1.869)	(1.738)	(1.870)	(1.800)
1983	-0.258	-0.378	-0.0122	-0.319
	(1.592)	(1.425)	(1.529)	(1.431)
1986	-0.00538	0.439	0.145	0.607
	(0.533)	(0.553)	(0.591)	(0.581)
1987	0.249	0.0978	0.182	0.211
	(0.432)	(0.406)	(0.396)	(0.383)
1988	-0.113	-0.117	-0.300	-0.0422
	(0.533)	(0.499)	(0.377)	(0.336)
1989	-0.256	-0.214	-0.558	-0.183
	(0.741)	(0.661)	(0.503)	(0.396)
1990	-0.562	-0.433	-0.932	-0.349
	(0.805)	(0.640)	(0.614)	(0.525)
1991	-0.826	-0.736	-1.236*	-0.733
	(1.048)	(0.876)	(0.708)	(0.568)
1992	-1.201	-1.158	-1.589**	-1.169**
	(0.988)	(0.764)	(0.672)	(0.549)
1993	-1.160	-1.172	-1.542**	-1.094
	(1.047)	(0.848)	(0.740)	(0.652)
1994	-1.281	-1.359	-1.605*	-1.272*
	(1.117)	(0.945)	(0.842)	(0.731)
1995	-1.812	-1.882*	-2.162**	-1.876**
	(1.231)	(0.991)	(0.848)	(0.761)
1996	-2.649**	-2.842***	-3.049***	-2.884***
	(1.115)	(0.960)	(0.875)	(0.804)
1997	-2.546**	-2.656**	-3.023***	-2.783**
	(1.198)	(1.133)	(1.096)	(1.065)
1998	-3.188**	-3.362***	-3.693***	-3.475***
	(1.247)	(1.137)	(1.072)	(1.041)
1999	-3.690***	-3.738***	-4.369***	-3.884***
	(1.256)	(1.131)	(1.046)	(1.055)
2000	-3.181**	-3.264**	-3.863***	-3.229**
	(1.387)	(1.327)	(1.181)	(1.228)
2001	-2.485*	-2.609*	-3.231**	-2.556*
	(1.454)	(1.376)	(1.264)	(1.320)
2002	-2.793*	-2.906**	-3.612***	-2.934**
	(1.491)	(1.255)	(1.133)	(1.137)
2003	-3.286**	-3.391***	-4.185***	-3.531***
	(1.487)	(1.250)	(1.160)	(1.106)
2004	-3.687**	-3.616***	-4.652***	-3.803***
	(1.557)	(1.336)	(1.245)	(1.194)
2005	-2.851*	-2.623*	-3.838***	-2.816**
	(1.686)	(1.469)	(1.410)	(1.275)
2006	-2.937*	-2.851*	-4.003***	-3.213***
	(1.717)	(1.445)	(1.392)	(1.183)
2007	-2.606	-2.339	-3.721**	-2.766*
	(1.980)	(1.668)	(1.740)	(1.513)
Org. Effects	✓	✓	✓	✓
Year Effects	✓		✓	
Year*Region Effects		✓		✓
Macro Controls			✓	✓

Table B3: Difference-in-Differences Estimates (With Reported Zeroes)

	(1) Log Real Contributions +$10,000	(2) Log Real Contributions +$25,000	(3) Log Real Contributions +$50,000	(4) Log Real Contributions +$25,000
	Including Zero Contributions			Main Sample
$\Delta_{86-88} TaxCost_{s(i)} * Post86_t$	-3.160*	-3.052**	-2.870**	-3.794***
	(1.664)	(1.431)	(1.262)	(1.385)
Org. Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Observations	21318	21318	21318	16882
R-squared	0.835	0.851	0.862	0.890
Number of Orgs	4125	4125	4125	3273

Notes: Dependent variable is log of real charitable contributions plus a constant, in 2012 dollars. Independent variables are described in notes to table 2. The sample includes organizations reporting zero direct support in some years. Standard errors in parentheses are clustered by state.
Sources: See notes to table 2.

Table B4: Last Year Observed Regressed on Financial and Tax Variables

	(1)	(2)
Data Year	1986	1989
Log Assets	0.245***	0.331***
	(0.0453)	(0.00846)
Log Total Income	-0.139**	0.0159
	(0.0610)	(0.0191)
Log Contributions +Grants	0.155***	0.108***
	(0.0154)	(0.00670)
Log Program Service Revenue	0.0228	0.0536***
	(0.0144)	(0.00835)
Log Tax Price	-1.469	-0.912
	(2.390)	(2.177)
$\Delta_{86-88} TaxCost_{s(i)}$	-1.177	-0.202
	(2.198)	(0.801)
Constant	2000***	1998***
	(0.713)	(0.497)
Observations	6644	135808
R-squared	0.043	0.055

*** $p < 0.01$
** $p < 0.05$
* $p < 0.1$
Notes: Dependent variable is the last year for which the organization is observed in the Statistics of Income or IRS Core Data files of form 990 filings, up to year 2007 — so column 1 regresses the last year in which organizations present in the 1986 data are observed, while column 2 regresses last year observed for organizations present in the much larger 1989 Core data set. Standard errors in parentheses are clustered by state.
Sources: See notes to table 2.