How Does Charitable Giving Respond to Incentives and Income? Dynamic Panel Estimates Accounting for Predictable Changes in Taxation

Jon Bakija
Williams College
Williamstown, MA 01267
jbakija@williams.edu

Bradley T. Heim
Office of Tax Analysis
U.S. Department of the Treasury
Washington, DC 20220
Bradley.Heim@do.treas.gov

March, 2008

This paper estimates the elasticity of charitable giving with respect to tax-prices and after-tax incomes using a panel of nearly 500,000 disproportionately high-income tax returns spanning the years 1979 through 2005. We improve upon the previous literature by using state tax variation to help identify our model while controlling for unobserved heterogeneity, allowing people at different income levels to have different degrees responsiveness to taxation, and carefully dealing with the fact that, because of lags between proposal, enactment, and implementation of tax reforms, near-future changes in taxes are generally predictable in advance. To address the omitted variable bias that would otherwise arise from failing to control for unobservable expectations of future prices and future incomes, we use predictable changes in future federal and state marginal tax rates and tax liabilities, arising from their pre-announced and phased-in nature, as instruments for future changes in prices and income. In models where identification of price effects comes largely from different time paths of marginal income tax rates across different states and across people at different income levels within the same income class, we find robust evidence of a modest but statistically significant elasticity of charitable giving with respect to persistent changes in tax-price among people with incomes in excess of $100,000, generally in the range of -0.5 to -0.8. Evidence on the persistent price elasticity for lower-income people is weaker and more mixed. Despite a large spike in giving among very-high income people in apparent anticipation of lower future tax benefits from charitable giving arising from enactment of the Tax Reform Act of 1986, we find surprisingly little evidence that people re-time their giving in response to anticipated differences between current and future tax savings from doing so over the sample period as a whole and across income groups. We find several results that are consistent with the permanent income hypothesis. Our estimates suggest that expenditures on charitable giving respond strongly to persistent changes in income, while responding very little to transitory fluctuations in income. Moreover, we find strong evidence that people will increase their charitable giving now in response to a predictable reduction in future tax liability arising from tax reform.

Prepared for the NBER Tax Expenditures Conference, March 27-29, 2008. The views expressed are those of the authors and do not necessarily reflect those of the U.S. Department of the Treasury.

Tax policies in the U.S. subsidize charitable giving in a variety of ways, and they subsidize donations by high-income people particularly strongly. The deductibility of charity from the federal and most state income taxes effectively reduces the price of charitable giving relative to non-deductible consumption to one minus the marginal income tax rate for those who itemize deductions, while the opportunity to avoid capital gains taxes on charitable gifts of appreciated assets reduces the price of charity still further. The degree to which people respond to these tax incentives is a matter of considerable policy interest. For example, in the recent debate over repealing the federal estate tax, the impact of that tax on charitable giving has been a major issue. Similarly, income tax reform proposals often involve changes to the treatment of charity -- for instance, the 2005 report of the President's Advisory Panel on Federal Tax Reform proposed extending a tax benefit for charity to all taxpayers, but limiting it to charitable donations that exceeded one percent of income. In general, the case for providing tax incentives for charitable giving is stronger when charitable giving decisions are more responsive to the incentives. Saez (2004) demonstrates this intuition in a formal optimal tax model where charitable donations are treated as a consumption good with positive externalities. In that case, the economically efficient subsidy rate for charity is higher when donations are more responsive to their price.

The price-responsiveness of charitable giving may well differ across the income spectrum, and it is important to know how. Very high income people account for a disproportionate amount of our nation's charitable giving. For example, taxpayers with incomes above $200,000 reported $58.6 billion in charitable donations on their income tax returns in 2004, accounting for 36 percent of all charity reported by taxpayers, and about 30 percent of all charitable gifts by living individuals.[1] In recent years, major changes to the federal income tax and estate tax have been enacted, and even more fundamental changes have been seriously debated. Most of these actual and proposed changes impact incentives to give to charity much more for high-income individuals than for others, and because these high-income people account for so much of the nation's charitable giving, the tax changes may have important consequences for philanthropy in the United States. Moreover, because the optimal subsidy for charity varies depending on its price elasticity, knowing how the price elasticity differs across different types of people is useful for evaluating potential reforms such as replacing the current deduction, which subsidizes the giving of high-income people at a higher rate, with a flat rate credit that would provide equal marginal incentives to all taxpayers.

[1] Source: author's calculations based on data from the IRS web site <http://www.irs.gov/pub/irs-soi/04in54cm.xls> and from the Center on Philanthropy at Indiana University (2007).

There have been many empirical estimates of the price elasticity of charitable giving -- that is, the percentage change in charitable donations caused by a one percent change in its price. Peloza and Steele (2005) and Brown (1996) offer recent literature reviews. These studies have generally used variation in marginal federal income tax rates across income groups to identify variation in price of giving. Both income and price, among other things, can be expected to influence charitable giving decisions. As Feenberg (1987) has emphasized, a critical problem in the empirical literature on charitable giving is that most of the variation in price comes from the fact that the marginal federal income tax rate is an increasing non-linear function of income. Consequently, in a cross-section, separate identification of price and income effects relies almost entirely on restrictive assumptions about the functional form of the relationships among charitable giving, price, and income. Price elasticity estimates could be seriously biased, for example, if income has some arbitrary non-linear relationship with charitable giving but the appropriate non-linear functions of income are omitted from the specification, or if there are omitted variables that influence charitable giving and that have a non-linear relationship with income.

Much of the early literature on this subject relied on single-year cross-sectional income tax return data. These studies typically found large elasticities of charitable giving with respect to the income tax price, in excess of one in absolute value. But these studies may of course suffer from the identification problems noted above. Several studies, including Broman (1989), Randolph (1995), Barrett, McGuirk, and Steinberg (1997), Bakija (2002), Auten, Sieg, and Clotfelter (2002), and Bakija and McClelland (2004), among others, have estimated income tax price elasticities of charitable giving using panel data spanning periods when federal tax reforms changed marginal income tax rates in different ways over time for different people. While federal tax reforms provide a better source of identification, these studies are not immune to problems either. First, many of these studies still use differences in income tax rates arising from differences in income to help identify the price elasticities – for example, Randolph's widely-cited study uses a random effects approach, meaning that the variation in price used to identify the estimates still arises partly from cross-sectional differences in income across people. Second, these studies effectively use middle income people (for whom federal tax reforms had little impact on marginal tax rates) as a control group for high income people (for whom federal tax reforms had large impacts on marginal rates). This may be a source of bias because patterns of giving over time for middle-class people may provide an inaccurate counterfactual for what would have happened to the charitable giving of high-income people in the absence of tax changes. Third, it seems likely that responsiveness to tax incentives may differ systematically across income groups, but these studies have no credible source of identification to allow separate estimates of price elasticities at different income levels.

A few studies have used identification strategies that do not suffer from the thorny problems of disentangling income and price effects noted above. Feenberg (1987) uses the top income tax rate in each state as an instrument for the tax-price of giving, using a cross-sectional sample of tax returns with incomes below $200,000. This approach still yields a large, but imprecisely estimated, price elasticity. A potential drawback with that approach, though, is that there may be omitted characteristics of states, such as cultural factors, that influence charitable giving and which may be correlated with top state tax rates.

Karlan and List (2006) conduct the first randomized field experiment on the influence of price on charitable giving. In their study, over 50,000 individuals who had previously contributed to a non-profit organization were selected to receive different matching rates on their contributions (0, 1-to-1, 2-to-1, and 3-to-1) in a mail solicitation. This creates a completely exogenous source of variation in the price of giving. Karlan and List find that offering a match increases donations relative to not offering a match, but that once a match is offered, varying the size of the match has no statistically significant effect on the amount of contributions. Their estimates imply an absolute price elasticity of giving of 0.3 when evaluated over the full sample, which is at the extreme low end of previous estimates based on tax data. Even more striking is that among people who receive any match at all, the implied price elasticity of giving is approximately zero.

Karlan and List's experimental evidence intensifies the concerns that high estimated price elasticities in the previous tax-based literature may arise from the identification problems, rather than a true responsiveness of charitable giving behavior to incentives. Nonetheless, their study is certainly not the last word on the subject. While the matching rates in their experiment are economically equivalent to tax incentives, people might have different responses in the two contexts for psychological reasons, as the incentives are framed quite differently in each case. Differences in context may also influence the likelihood that people devote their scarce attention to the incentives -- for instance, many solicitation letters are thrown away unread, whereas one cannot behave so casually with one's tax return without risking penalties. The donors to one particular non-profit may not be representative of the larger public. And even if the Karlan and List evidence were an accurate representation of the behavior of the average person, it seems likely that high-income individuals may be much more responsive to incentives to give to charity than the average person, for instance because of greater financial flexibility and greater sophistication about tax planning.[2]

A second critical challenge is to disentangle long-run responses to persistent changes in price and income from short-run timing behavior. The optimal degree of subsidy to charity depends largely on the degree to which subsidizing it will increase the long-run level of giving. We also care about the degree to which people may be willing to re-time their giving in response to difference between current and expected future tax incentives, both because it is an interesting question in its own right, and because empirical evidence on this question is useful for evaluating certain types of tax reforms. For example, it is sometimes proposed that there be a floor, as a percentage of income, below which charitable donations are not deductible. This is appealing because it could retain the incentive for marginal giving for most people without losing revenue by subsidzing inframarginal giving. But it would also create an incentive to re-time giving, for example by bunching it in to alternating years, in order to maximize the tax benefits. If people are highly willing to game the system by retiming their giving, the reform would create added complexity and transaction costs while saving little revenue.

Disentangling persistent behavior from timing responses is a difficult problem. Differences between current and expected future prices of charitable giving can arise because fluctuations in income that are known to be transitory push someone temporarily into a different marginal tax bracket, and they can arise because of changes in tax law. There are often long lags between proposal and enactment of changes in tax law, during which time the prospective changes are generally well-publicized. Once enacted, the changes often do not begin to apply until a future year, or are gradually phased-in over several years. As a consequence, differences between current and expected future prices of charitable giving are ubiquitous, creating many opportunities to reduce tax liability through re-timing of giving. If we fail to account for this, our estimates of the price-responsiveness of giving will be biased indicators of the long-run responsiveness of giving to persistent changes in incentives. For example, if we find that people give more to charity when they face high tax rates, that could be because they are moving charitable giving into that year from other years with lower tax rates, possibly without changing the long-run amount of giving at all. We might expect timing behavior to be much more responsive to incentives than long-run behavior, because changing the timing of giving may involve little or no real sacrifice, whereas changing the long-run level of giving requires a real

[2] Karlan and List do provide some evidence on this question, but it is very limited. They find no statistically significant differences in the effect of the treatment on the probability of donating between people from above-median-income and below-median-income zip codes.

sacrifice of lifetime consumption. In principle, though, it could go the other way around. For instance, people might respond more to a persistent change in prices than to a short-run transitory change, because it takes a while to learn about the changes in incentives or to change old habits and commitments.

Disentangling transitory and persistent changes to price and income, and separating out the responses to each, has been central issue in the previous literature, but solutions implemented so far have not led to consensus on the magnitudes of the relevant elasticities. Randolph addresses the issue by using a 10-year average of income, interacted with dummies for time periods corresponding to different federal tax regimes, as instruments for the current federal tax price and current disposable income, in an effort to isolate the permanent portion of variation in current price and income. He then essentially uses the residual between actual current price and income and their values predicted by the permanent instruments as measures of transitory fluctuations in price and income. He estimates very large responses to transitory price variation and small responses to persistent price variation. When evaluated at the mean expenditure share of giving in his sample, the transitory price elasticity is found to be -2.3, while the persistent price elasticity is just -0.1. Randolph's evidence does suggest that timing behavior could be quite important and that failure to take it into account could seriously bias estimates of the persistent effect of price, but it is not the end of the story. Because the identification strategy relies heavily on differences across people in ten-year averages of income, he is unable to control for unobserved heterogeneity through fixed effects, and the estimates are also subject to potential biases discussed earlier because much of the identifying price variation comes from cross-sectional differences in income. Another limitation is that the difference between current and ten-year average income is assumed to be all transitory, when in fact some of it may reflect innovations in permanent income over time. The procedure also offers no way to deal with pre-announced or anticipated changes in tax law, and instead omits years, like 1986, when tax reforms created obvious differences between current tax rates and the tax rates that people knew would apply in the future. This fails to exploit a particularly credible way to identify differences between current and expected future prices, and whether people respond to these differences. Moreover, the whole idea of re-timing giving implies that behavior in the years with differences between current and expected future taxes has consequences for the level of giving in other years, so omitting the years with transitory differences does not necessarily solve the problem.

Auten, Clotfelter, and Sieg estimate a system where income and price are assumed to follow a stochastic process where each experiences random-walk style shocks that persist indefinitely, along with random transitory shocks that die off after one year. Their estimates vary depending on specification, but for the most part suggest a large elasticity of giving with respect to persistent price changes and a small elasticity with respect to transitory price changes. The procedure that they develop deals well with transitory fluctuations of the sort where, for example, income or price goes up for one year and then goes back down. It does not deal well with situations where one persistent pattern of prices suddenly changes to another persistent pattern of prices, but where people anticipate the change and respond to it in advance, because their estimation procedure treats the actual change in tax rates as a surprise at the date it starts to apply. If people accelerate or delay giving in anticipation of the future persistent change, that can contaminate their estimates of the response to the persistent change, which is based on comparing giving before and after the change assuming it was a surprise. The major federal tax reforms during their sample period were generally predictable before the year they began to apply, so this is potentially an important concern.

Several papers, including Broman (1989), Barrett, McGuirk, and Steinberg (1997), Bakija (2002), and Bakija and McClelland (2004), among others, have estimated models of charitable giving that explicitly addressed anticipated changes in tax law in various ways, as have a variety of papers looking at the effects of taxes on other forms of behavior where timing may be important, such as capital gains realizations and taxable income elasticities. We build on these approaches. The charity papers mentioned above estimated relatively small persistent price elasticities and somewhat larger transitory price elasticities, but with wide confidence intervals. While Randolph and Auten, Sieg, and Clotfelter had access to a confidential Treasury department panel with a very large sample of high-income taxpayers, the papers mentioned above that have attempted to deal explicitly with anticipated tax changes have all been estimated on a small public-use panel of individual tax returns with very few high income taxpayers. So part of the motivation of this paper is to deal carefully with anticipated changes in tax law using better data. In this study, we use a large panel of tax returns that spans 1979-96 and 1999-2005 and heavily oversamples high-income people to estimate the responsiveness of charitable giving to the price of giving. We start with a basic model where giving depends only on the current-period price and income. We then extend this model to account for adjacent years' prices and incomes, and use predictable changes in federal and state tax law as instruments for future prices and income, to examine the extent to which giving responds to persistent and transitory changes in prices and incomes.

In models where identification of price effects comes largely from different time paths of marginal income tax rates across different states and across people at different income levels within the same income class, we find robust evidence of a modest but statistically significant elasticity of charitable giving with respect to persistent changes in tax-price among people with incomes in excess of $100,000, generally in the range of -0.5 to -0.8. Evidence on the persistent price elasticity for lower-income people is weaker and more mixed. Despite a large spike in giving among very-high income people in apparent anticipation of lower future tax benefits from charitable giving arising from enactment of the Tax Reform Act of 1986, we find surprisingly little evidence that people re-time their giving in response to anticipated differences between current and future tax savings from doing so over the sample period as a whole and across income groups. In the estimated income elasticities, several results are consistent with the permanent income hypothesis. Our estimates suggest that expenditures on charitable giving respond strongly to persistent changes in income, while responding very little to transitory fluctuations in income, and these findings are consistent across income groups. Moreover, we find strong evidence that people will increase their charitable giving now in response to a predictable reduction in future tax liability arising from tax reform.

Empirical model

To estimate the responsiveness of charitable giving, we estimate a log-log equation, in which the log of charitable giving is regressed against the logs of price and income variables, and other control variables. In log-log models, the price elasticity and income elasticity are restricted to be constant across all observations, and can be determined directly from the coefficients.

First, we estimate a simple model where giving depends on current price and current income, a set of individual and state level covariates, and year effects. The full model is:

$$(1) \qquad lnG_{it} = \alpha_t + \mathbf{X_{it}\beta_0} + \beta_1 \ln(P_{it}) + \beta_2 \ln(Y_{it}) + \varepsilon_{it}\,.$$

In equation (1) above, i indexes individuals and t indexes years. P_{it} is the income tax price of charitable giving, which is defined as:

$$(2) \qquad P_{it} = 1 - mtr_{it} - n_{it}*a*(d*mtrcg_{it+1} - mtrcharcg_{it})$$

This price incorporates both the tax savings from the charitable deduction, and the extra tax savings from avoiding a taxable realization of capital gains. In it, mtr_{it} is the combined federal-state marginal tax rate on charitable giving (defined as the reduction in tax liability caused by a $1 increase in charitable gift), $mtrcg_{it+1}$ is the marginal tax rate on long-term capital gains, and

$mtrcharcg_{it}$ is the marginal tax rate on unrealized capital gains on donations of appreciated property, which were included in the base of the federal alternative minimum tax (AMT) from 1987 through 1992 (this is non-zero only for returns subject to the AMT).[3] Further, n represents the share of charitable donations that are non-cash, a represents the gain-to-value ratio of non-cash donations, and d is a discount factor to reflect the fact that the alternative to donating an appreciated asset may be to hold on to it and not realize the gain until many years in the future, reducing the present value of tax liability, or perhaps to hold onto it until death, in which case it will not be taxed at all. Because n is endogenous, in the instruments for price we replace it with an exogenous time-invariant measure based on averages by income class estimated from our data.[4] We have estimated a to be 0.65, on average, based on AMT returns from 1989-1992.[5] For d, we choose a value of 0.7; the derivation of that number is explained in Appendix One. This discount factor only applies to *mtrcg*, because if a taxpayer donates a dollar of an appreciated asset, they must pay *mtrcharcg* today. We use the anticipated future $mtrcg_{it+1}$ because the likely alternative to current donation is realization at some point in the future.

y_{it} is disposable income, and is defined as:

(3) $$y_{it} = Y_{it} - T_{0it}$$

[3] A number of states operated alternative minimum taxes based on the federal version during this period and also included gains on donations of appreciated assets in the AMT taxable base; most stopped in 1992 along with the federal, but California continued to tax these gains through 2001.

[4] The average share of charitable giving that is non-cash in our sample ranges from 0.13 for returns with income below $50,000 to 0.44 for returns with incomes above $1 million (with incomes measured in constant 1997 dollars and replacing capital gains realizations with 6% of capitalized dividends). When constructing the price instruments, for the lowest and highest income classes, we assign the mean share for that income class to everyone in the income class. For other income classes, we assign the mean share for that income class to people with incomes at the midpoint of the income class, and then linearly interpolate between income classes to assign the shares for all other returns. This is intended to avoid spurious jumps in the price instrument when a taxpayer moves across an income class boundary. Previous literature, including Randolph and Auten, Sieg, and Clotfelter have constructed their price variables using time-varying means of non-cash giving by income class. We eschew this approach and use time-invariant means instead, out of concern that the time-patterns of non-cash giving are endogenously related to timing incentives. For example, there is a very large increase in the non-cash share among high-income returns in 1986, which is likely a response to anticipated future tax changes, such as the inclusion of capital gains on donated assets into the AMT. Finally, note that we are missing the actual value of non-cash giving for a subset of returns in 1979 and 1980. In those cases, when constructing the "actual" price, we substitute our exogenous measure of non-cash share for actual n in equation (2) above.

[5] To avoid selection bias, a sample of people who would have been on the AMT even without donating an appreciated asset is used to compute the mean.

where Y_{it} is pre-tax income T_{0it} tax liability computed setting charitable giving to zero. This is standard in the literature – intuitively, we are treating disposable income with charitable giving set to zero as the available budget, and incorporating the benefits of tax deductibility of charitable giving into the price rather than disposable income.[6]

We then estimate a specification that attempts to separate transitory from persistent effects. This approach follows the method used in different contexts by Barret, McGuirk, and Steinberg (1997), Burman and Randolph (1994), and Goolsbee (2000), among others, with some variations. We estimate:

$$
\begin{aligned}
(4) \qquad lnG_{it} = {} & \alpha_i + \alpha_t + \mathbf{X_{it}\beta_0} \\
& + \beta_1[lnP_{it-1} - lnP_{it-2}] + \beta_2 [lnP_{it} - lnP_{it-1}] + \beta_3 lnP_{it} + \beta_4[lnP_{it+1} - lnP_{it}] \\
& + \beta_5[lny_{it-1} - lny_{it-2}] + \beta_6[lny_{it} - lny_{it-1}] + \beta_7 lny_{it} + \beta_8 [lny_{it+1} - lny_{it}] \\
& + \varepsilon_{it.}
\end{aligned}
$$

In this specification, we also include individual fixed effects to control for any factors influencing charity that are constant across time for a given taxpayer.

In equation (4), the effect on long-run giving of a persistent increase in price is given by β_3. Intuitively, β_3 estimates the effect of a one percent increase in price holding two lags and one lead of changes in price constant, which happens when there has been an increase in price that has persisted over three yeas and is expected to persist through the next year as well.[7] The effect on giving today of an anticipated increase price next year is given by β_4, and the effect on giving today of a one period transitory increase in price this year is given by $(\beta_2 + \beta_3 - \beta_4)$. Intuitively, β_3 tells us the effect on giving this year of the price this year per se, while β_2 and β_4 tell us the effect on giving today of the price today being different from adjacent years. Analogously, β_7 is the

[6] Our measure of pre-tax income Y is defined to be as consistent as possible over time and across individuals given information available in our tax return data. Income equals (adjusted gross income) + (total adjustments) + (excluded capital gains) + (excluded dividends) - (social security in AGI) + (unemployment benefits excluded from AGI) - (1/2 of self-employment taxes) - (state tax refunds) + (partnership and S-corporation losses). Following previous studies on this subject, we remove social security benefits from income, because information on social security benefits is not available for taxpayers with incomes below the threshold where they become taxable, and are not available at all before 1984. We add back in partnership and S-corporation losses because these largely represent passive losses (frequently related to tax shelters) that were disallowed following the Tax Reform Act of 1986, and that arguably misrepresented true economic losses before 1986.

[7] Note that the price variables could be re-arranged as $\gamma_1 lnP_{it-1} + \gamma_2 lnP_{it-1} + \gamma_3 lnP_{it} + \gamma_4 lnP_{it+1}$. $\beta_3 = \gamma_1 + \gamma_2 + \gamma_3 + \gamma_4$ in that specification, so β_3 estimates the effect of a uniform percentage increase in price that persists over at least four years. An analogous re-arrangement can be performed with the income variables.

response to a persistent change in income, β_8 is the response to an anticipated in income next year, and the effect on giving today of a one period transitory increase in income this year is given by $(\beta_6 + \beta_7 - \beta_8)$.

As a specification check, we also estimate an analog of (4) using two period leads for both price and income,[8] of the form:

$$
\begin{aligned}
(5) \qquad lnG_{it} = {} & \alpha_i + \alpha_t + \mathbf{X_{it}\beta_0} \\
& + \beta_1[lnP_{it-1} - lnP_{it-2}] + \beta_2[lnP_{it} - lnP_{it-1}] \\
& + \beta_3 lnP_{it} + \beta_4[lnP_{it+1} - lnP_{it}] + \beta_5[lnP_{it+2} - lnP_{it+1}] \\
& + \beta_6[lny_{it-1} - lny_{it-2}] + \beta_7[lny_{it} - lny_{it-1}] + \beta_8 lny_{it} + \beta_9 [lny_{it+2} - lny_{it}] \\
& + \varepsilon_{it.}
\end{aligned}
$$

In this equation, the effect on long-run giving of a persistent increase in price is given by β_3, the effect on giving today of an anticipated increase price next year that persists to the following year is given by β_4, and the effect on giving today of an anticipated increase in price two years from now is β_5. Finally, the effect on giving today of a one period transitory increase in price this year is given by $(\beta_2 + \beta_3 - \beta_4)$. Income effects are defined analogously.

In estimating these equations, we use the first-dollar price, that is, the price of giving when all marginal tax rates are calculated by setting giving to zero, as instruments for lnP_{it-1}, lnP_{it-1}, and lnP_{it}. Since it is preferable not to assume that future after-tax incomes and prices known with perfect foresight, for future price and income variables, we identify effects using predictable changes arising from pre-announced changes in tax law. As a result, for changes in future price and future incomes, we construct instruments by calculating future changes in price and after-tax income using expected future tax law at time t, evaluated holding income and the inputs to the tax calculation function (**Z**) at their year t values in real terms.[9]

---

[8] Note that in this specification we include only a two period lead for income (that is, income at t+2 minus income at t), since the data did not contain enough variation to separately estimate one and two year leads in income. However, since only the change in the present value of future tax liabilities, and not the pattern over time in the future, should matter for giving, this is not much of a weakness to this specification. We include the second specification over the first since all of the identification for this coefficient comes from tax reforms that are pre-announced and phased-in gradually over time, and so the change in tax liability two periods ahead is probably a better indicator of the effect of the tax reform on the present value of a taxpayer's resources.

[9] There are some exceptions to this. First, in constructing this instrument, we replace realized capital gains with a smooth imputed value, calculated by capitalizing dividends multiplied by a fixed rate of return of 6%. This is the average ratio of capital gains realizations to capitalized dividends in the 1979-90 University of Michigan public use tax panel, and is also the average real rate of appreciation on the

For the expected future law in year t, we assume that taxpayers know about any federal tax reform that has already been enacted in year t, and also know about any reform that will take effect starting in year t+1. So for example, we assume that taxpayers in 1986 know about TRA86 because it was enacted before the end of the year, and they knew what affect it will have in 1987 and 1988. However, we assume that people did not anticipate TRA86 in 1985. This rule also means that we assume that people in 1992 already know about the federal tax changes enacted in 1993, and in 2002 already know about the federal tax changes that would be enacted in 2003. For state tax reforms, we assume that people know about state tax law one year in advance.

We control for life cycle and demographic factors marital status, age, age squared, number of children living at home, and number of other dependents (age and marital status are dropped from the fixed-effects specifications, because age is collinear with the combination of fixed effects and year dummies, and marital status is time-invariant for an individual given our sample selection method, described below). Because we rely on state income tax variation for some of our identification, we also control for some state characteristics that could in principle affect charitable giving and be correlated with state income tax policy. We include a variable $ln(Prst) = ln(1/(1+s))$, where s is the state retail sales tax, to control for the effect of state retail sales tax on the relative price of charitable giving. A state-year specific log of median housing price variable is included to control for possibly differing trends in the cost of living across states, since we might expect a higher cost of living to be associated with lower charitable giving, as it implies lower real income and wealth. We also include the state unemployment rate for each year to capture the possible impact of economic factors that may change in different ways over time in different states. A survey-based measure of church attendance in each state is also included. Since we have this church attendance measure for a single year, it is treated as a time-invariant variable and dropped from the equations that include individual fixed effects. Finally, we include state and local government spending as a share of personal income. [10]

We also try estimating some pooled cross-section regressions where we construct instruments for price that depend entirely on state tax variation for identification. One common approach is to use the top statutory tax rate in a state as an instrument, but we wish to do this in a way that captures complicated interactions between state and federal taxes, such as those caused

S&P500 during our sample period of 1979-2005. The rationale here is that capital gains realizations clearly represent a transitory fluctuation in income. In addition, we replace taxpayer age with their future age.

[10] See appendix two for further details on the control variables and their sources. The church attendance variable is missing for Alaska and Hawaii, so we use the national average of the variable for those two states.

by cross-deductibility and the AMT. Our approach is to select a random 10% sub-sample of the 1985 SOI public use tax file, hold all taxpayer characteristics except for state taxes constant in real terms, make 51 copies of the sample (one for each state and DC), and then calculate marginal tax rates for each member of the sample from 1979-2005 for each of the 50 states and DC.[11] We then compute population weighted averages of these tax variables for each state-year combination, using only taxpayers from a particular income class when the sample for estimation is limited to that particular income class. So within a given estimation sample, the variation in this instrument will arise exclusively from state tax law and its interaction with federal tax law, since we are using the exact same set of taxpayers, holding their non-state-tax characteristics constant in real terms, to calculate the tax rates in all states and all years.

To examine whether price and income effects of giving differ by income class, we estimate analogs of the estimating equations above on separate samples split by income categories. Each taxpaying unit is classified into an income category based on the average real income of the taxpaying unit over the years it is included in the sample. Doing so allows elasticities to differ for people at different income levels, and also helps to control for unobservable influences that change in different ways over time for different income classes, since (in some specifications) we estimate separate time dummies for each income class.

All regression equations are estimated using instrumental variables. Standard errors are robust to arbitrary forms of heteroskedasticity across cells, and are clustered by state and average income group to allow for arbitrary forms of correlation among the errors in each income group within each state.[12]

Data

Data for this paper come from three panels of tax returns that were collected between 1979 and 2005, each of which over-sampled high income taxpayers.

The first panel was collected from returns filed for tax years 1979 through 1995. To create this dataset, a stratified random sample (where the probability of being selected increased

[11] For purposes of computing itemized deductions, we multiply property tax deductions by the ratio of (state and local property taxes as a percentage of personal income) in the particular state and year to the national average of this variable in 1985, and multiply state sales taxes paid by the ratio of the retail sales tax rate in this state and year to the national average retail sales tax rate in 1985. This is intended to help us accurately capture the disparate impact of the federal AMT depending on the level and composition of state and local taxes.

[12] When the second instrument set is used, standard errors are clustered by state only.

with income) of approximately 20,000 tax returns was drawn in 1981. Returns from these taxpayers were then collected from 1979 and 1980, and the taxpayers were followed until 1995. Although the smallest of the three panels used, this panel covers two important tax changes for studying the responsiveness to charitable giving, the Economic Recovery Tax Act of 1981 (ERTA81) and the Tax Reform Act of 1986 (TRA86). Over the years 1979-1995, this panel consists of almost 290,000 returns.[13]

The second panel was collected from 1987 through 1996, and is known as the Family Panel.[14] This panel consists of two segments – a cohort segment that was created by drawing a stratified random sample of taxpayers (including spouses and dependents) who filed in tax year 1987 and following them over the next nine years, and a refreshment segment consisting of a random sample of taxpayers who filed in tax years 1988 through 1996 who were not filers in 1987. Overall, the Family Panel consists of 1.26 million returns, and spans the Ominibus Budget Reconciliation Acts of 1990 and 1993 (OBRA90 and OBRA93) as well as covering the end of the phase-in of TRA86.

The third panel was collected from 1999 through 2005, and is known as the Edited Panel.[15] This panel consists of a stratified random sample of tax returns drawn in 1999, for which the primary and secondary filers were followed over the subsequent six years. This panel consists of more than 550,000 tax returns, and spans the two most recent major tax changes, the Economic Growth and Tax Relief Reconciliation Act (EGTRRA2001) and the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA2003).

In this study, information on charitable contributions comes from the amounts reported on tax returns, including Schedule A and (in 1985-86, when non-itemizers could deduct charitable contributions) Form 1040.

Marginal tax rates in this study were calculated using the comprehensive federal and state tax calculators described in Bakija (2008), and include state and federal income taxes, including such details as the minimum and alternative minimum taxes, maximum tax on personal service income, and income averaging in the years when these were applicable.[16] Marginal tax rates

---

[13] Versions of this dataset have been used in previous examinations of the effect of taxes on charitable giving, including Randolph (1995) and Auten et al. (2002).

[14] For more information on Treasury's Family Panel, see Cilke et al. (1999, 2000).

[15] For more information on the 1999-2005 Edited Panel, see Weber and Bryant (2005).

[16] The federal taxes owed computed by these calculators were benchmarked against the reported taxes on the tax forms. For some returns in 1979-95 panel, we backed out certain items needed for income averaging and AMT computations from the reported liabilities for those taxes through an iterative process.

were calculated by incrementing each variable (either charitable contributions, donations of appreciated asses, or long term capital gains) by ten cents and calculating the marginal increase in taxes owed. These were calculated both given the actual charitable contributions on the form (the last-dollar marginal tax rate), and after setting all charitable contributions to zero (the first-dollar marginal tax rate).

To create the estimation sample, several cuts were made. All dependent filers and all taxpayers under the age of 25 were dropped from the sample, as were married taxpayers who filed separately and taxpayers with missing state data (in cases where we were not able to infer state from nearby years of data). We then cut the data to include only those who would have itemized deductions even without any charitable contributions,[17] and whose taxes on the return were consistent with the taxes figured by the tax calculator.[18] Finally, we include only those taxpayers who are present in the sample and have the same marital status for six consecutive years. The resulting sample consists of 495,670 returns: 89,451 from the 1979-95 panel, 278,989 from the 1987-96 sample, and 127,230 from the 1999-2005 panel.

For the estimation sample, the computed taxes came very close to the corresponding amounts in the dataset, with a correlation of 1.0000 for federal tax liability before credits and minimum taxes in the 1979-95 panel, and correlations of 1.0000 for regular individual income tax liability[19] for the other two panels. The correlation of final federal tax liability is .999 for the 1979-95 panel, .999 for the 1987-96 panel, and .953 for the 1999-2005 panel.

Table 1 presents a description of the variables used in this study along with some descriptive statistics from the unweighted sample. In this sample, the mean amount of charitable giving is in excess of $85,000 (in 2007 dollars). This large amount of giving is not surprising given the large number of very high-income taxpayers in this sample. As further evidence of the substantial amount of high-income taxpayers in the sample, the mean after-tax income (y_{it}) is in excess of $1 million.[20] Almost 85% of the sample consists of married taxpayers, and the average age of the primary taxpayer is 51.

---

[17] In 1985 and 1986, when the charitable deduction for nonitemizers was available, we also include nonitemizers

[18] Specifically, we cut observations from the 1979-95 panel if the computed federal tax liability before credits and minimum taxes differs from the amount in the dataset by more than $10,000 for the 1979-95 panel. For the other two panels, we cut observations where the regular individual income tax liability differs from the amount in the dataset by more than $10,000.

[19] This is arrived at by applying the tax rates and brackets to taxable income.

[20] AGI is a reasonably broad and consistent measure of income over the 1997-2004 period, but there were some changes in federal adjustments subtracted out from gross income before arriving at AGI due to the

Since a number of the estimations are performed by income groups, Table 2 breaks out the sample by the average income of the taxpaying unit while in the sample. Returns are divided into six groups: those with average income less than $50,000, between $50,000 and $100,000, between $100,000 and $200,000, between $200,000 and $500,000, between $500,000 and $1 million, and in excess of $1 million. Of the 495,670 tax returns in the sample, roughly a quarter have average income of $1 million and above; only 20,109 have income of less than $50,000. This later figure is likely due to the fact that high income taxpayers are oversampled in the panels used in this dataset, and that we require taxpayers to have been exogenous itemizers for six consecutive years to be in the sample, since many individuals in the lowest income group either do not itemize deductions or fall below the filing threshold. In total, over 55,000 unique taxpaying units are represented in the sample.

To better see where identification of the coefficients of interest comes from in our sample, Figures 1 – 3 present time trends of the price and charitable giving variables used in the study, broken out by various groupings.

Figure 1 presents the average price of charitable giving by income class, where returns are classified according to the current year's income, using the income breaks above. In this graph, the effect of ERTA81 and TRA86 are striking, particularly for the top three income groups. For example, for the $1 million and above group, the price of giving rose from .33 in 1979, to in excess of .6 by 1988, after the phase-in of TRA86 was complete. Also noticeable in this graph are the effects of OBRA93, which particularly reduced the average price of giving for the highest three income groups, and EGTRRA2001 and JGTRRA2003, for which increases in the price of giving for the highest two income groups are apparent. For the lower two income groups, the effects of these tax reforms are present (with the exception of any noticeable effect of OBRA93), though much less noticable.

Since variation across states in the price of giving helps to identify the price coefficients (and in some specifications is the sole source of identifying variation), in Figure 2 we present the average price of charitable giving across the three most populous states (Texas, New York, and California) and two states that eliminated itemized deductions during the sample period (Louisiana and West Virginia). To prevent differences in income distributions across states from confounding these trends, these average prices were calculated by drawing a random sample of married couples with income between $200,000 and $500,000 from the 1985 SOI cross section, and then using this same set of taxpayers to calculate tax rates for each state. As in the previous

2001 and 2003 tax cuts. I use AGI because the IRS tables do not provide enough information in some of the eight years to produce a broader measure of income that would be consistent across time.

graph, the effects of the major federal tax law changes are present. In addition, variation across states over time is apparent. For example, prices compressed between 1979 and 1986, but then fanned out in the late 1980's and early 1990's. In addition, the effect of eliminating itemized deductions in West Virginia in 1987 and in Louisiana in 2003 is readily apparent. Differences in the time path of the tax-price of giving arise for a variety of reasons aside from the obvious effects of tax reforms in the state themselves. For instance, reductions in federal marginal tax rates increase the differences in effective tax rates across states because deductibility at the federal level no longer offsets so much of a marginal change in state tax liability. The federal AMT has widely disparate impacts across states, being much more likely to affect taxpayers in high-tax states than in low tax states, as state taxes are one of the major "tax preferences" added back into the tax base by the AMT. The AMT changes marginal tax rates in two ways, first by imposing a different marginal tax rate schedule than the federal tax and second by eliminating deductions for state taxes, which increases differences in effective marginal tax rates across states.

To examine time trends in the dependent variable during the sample period, Figure 3 presents charitable donations as a fraction of income, by income class. For this figure, a three year moving average of income was used, with capital gains realizations replaced by 6% of capitalized dividends, to smooth out the confounding effects of transitory fluctuations in income across years. For the top two income groups, those with income between $500,000 and $1 million and those with income in excess of $1 million, substantial increases in giving are apparent in 1981 and 1986, in which charitable donations peak at almost 7.5 percent of income. These peaks are suggestive of taxpayers anticipating the changes in the price of giving due to impending changes in federal tax legislation, particularly TRA86. After 1986, average giving for the top group hovers between 2.5 percent and 3.5 percent of income, though the share increases in the last three years of the sample. Giving for the lowest income group in this graph, those with income between $100,000 and $200,000, is much less volatile, and displays a slight upward trend through the sample period.

Results

Table 3 presents estimates of the effects of current price and income on charitable giving using a pooled-cross section approach. The most basic specification of the log-log equation (without state level characteristics as control variables) is shown in column (1), while state level characteristics are added in column (2). In both of these specifications, the price of giving is instrumented using the first dollar price. To examine the effect of using an alternate instrument set, Column (3) depicts the estimates a specification in which state-level average prices are used as instruments. Columns (4) and (5) present results from this specification where the sample is broken out by income group.

In the most basic specification that uses the first dollar price as the instrument, the price elasticity of charitable giving is estimated to be a highly significant -.860 with a standard error of .119, and the income elasticity is estimated to be .823, with a standard error of .018. This price elasticity is somewhat below the standard estimate of around -1.2 noted in Clotfelter (1985) for estimates of this type, but the income elasticity estimate is close to the standard estimate of around .7. Controlling for state level characteristics only changes these estimates slightly. In these specifications, identification for the price effect comes from variation in federal law across time and across income levels, variation across states, variation across time within a state, and variation across income levels within a state. To examine the extent to which these different sources of variation are driving the estimated coefficient, in Column (3) the instrument used is changed to be the average price of giving in the state-year cell to which the individual belongs, but calculated holding taxpayer characteristics other than state taxes constant in real terms across states and years, as discussed above. As a result, variation across income groups is not used to identify the coefficients. When this is done, the estimated price elasticity increases to -1.259, though the standard error increases to .667. The income elasticity is estimated to be .798 with a standard error of .039. These estimates are quite similar to the price elasticity of -1.34 and income elasticity of .73 found in Feenberg (1987) when a similar source of variation was used. When the sample is divided into those with income less than $100,000 and those with income in excess of $100,000, the estimated elasticity for the low income group is -.396, while the elasticity for the high income group is -1.130. Again, however, the standard errors are large.

Tables A.1 through A.4 present coefficient estimates of different versions of equations (4) and (5), which separately estimate responses to persistent and transitory changes in price and after-tax income and control for fixed effects. To aid in interpretation of these coefficients, in Tables 4 through 7, we present the implied permanent and transitory price and income elasticities.

Table 4 presents the results from a specification in which two lags and one lead of price and income changes are included in the estimating equation. In this specification, time effects are assumed to be common across all income classes. In cases where we estimate on samples separated by income class, we implement this by first running regressions of the dependent variable, explanatory variables, and instruments on year dummies using the full sample, and then using the residuals in the regressions estimated on samples limited to particular income classes. The purpose of this is to allow different time paths of federal tax rates across different income classes to contribute to the identification of our model. To do so, we must assume that there are no omitted influences on charitable giving that change in different ways over time across income classes in a way that is correlated with federal tax changes. We relax this assumption later. Column 1 presents the results when all individuals in the sample are included, and columns (2) through (5) present results for particular income groups.

In column (1), the persistent price elasticity is estimated to be a highly significant but modest -.616 with a standard error of .130, while the elasticity of giving with respect to a one period price increase at time t is estimated to be -.676 with a standard error of .066. Little effect of an anticipated price increase at time t+1 is found however, with the estimated elasticity being an insignificant .106. On the other hand, significant responses of giving are found for all types of income changes. The elasticity of giving with respect to a persistent income increase is estimated to be .638 with a standard error of .059, and the elasticity with respect to an anticipated income increase at time t+1 is estimated to be .348 with a standard error of .075. A much smaller, though still significant, elasticity with respect to a transitory income increase at time t is found, with an estimate of .190 and a standard error of .019.

Across all groups in columns (2) through (5), income effects are similar, with larger effects for persistent and anticipated income creases and smaller effects for transitory income increases. Price effects, however, differ somewhat. Taxpayers with income less than $100,000 tend to have similar elasticities compared to all taxpayers $100,000 and above, though the response to a persistent price increase among the low income group is somewhat smaller. Within the $100,000 and above group, the elasticities for the $100,000-$500,000 group are somewhat lower than the estimates for the above $100,000 group overall. However, the response of the $1 million and above group to a persistent price increase is estimated to be quite a bit larger, with an estimated elasticity of -1.000 with a standard error of .170. Across subgroups of the $100,000 and above group, though, little evidence of re-timing of giving in response to an anticipated future price increase is found. This is true even for the $1 million and above group, who have an insignificant elasticity of -.191. In almost all cases, the elasticity of giving with respect to a one period transitory increase in price is found to be only slightly larger than the effect of a persistent change in price, which is also inconsistent with a substantial degree of re-timing of giving.

In the specifications presented in Table 5, two leads in price and income changes are included in the specification, as in Equation (5). In column (1), when all observations are included, the elasticity with respect to a persistent price increase drops somewhat compared to Table 4, with an estimate of -.470 (and a standard error of .191). The estimated responses to an anticipated persistent price increase in time t+1, and an anticipated price increase at time t+2, are both insignificant. However, significant elasticities are again found for all income changes, with elasticities of .855 and .549 for persistent and anticipated (between time t and t+2) increases, and a smaller elasticity of .222 for transitory income increases in period t.

Looking across income groups in columns (2) through (5), the estimated effect of a persistent price increase for the $100,000 to $500,000 income groups has increased to -.915, but the estimated persistent price elasticity for the $1 million and above income group has fallen to -.591. However, no significant response to anticipated future price increases is found for any income group, including the highest income group.[21] On the other hand, income elasticities are again consistent across income groups, with significant responses to persistent and anticipated income changes, and smaller responses to transitory income changes for all of the subgroups.

In Table 6, we present the results from a two year lag and one year lead specification similar to that presented in Table 4, but we now allow time effects to differ across income classes when cutting the sample by income. When this is done for the $100,000 and below group in column (1), the elasticity of giving with respect to a persistent price increase drops substantially to an insignificant -.032, and the elasticity with respect to a transitory one period price increase at time t drops as well, to -.395. Estimated elasticities for those with incomes $100,000 and above in column (2) increase somewhat, to -.781 for a persistent price increase and -.705 for a transitory period t increase. For neither income group, however, does an anticipated price increase in t+1 have a significant effect. Looking within the $100,000 and above group in columns (3) and (4), the estimated persistent price elasticity is again higher for the $1 million and above group than for the $100,000 to $500,000 group, as is the response to a transitory one period price increase in time t. Again, little responsiveness is found to an anticipated future price increase, even among the highest income group. The estimated income effects, on the other hand, change little when time effects are allowed to differ by income group. For all income groups, responses to persistent and anticipated increases in time t+1 are significant, and larger than the estimated elasticities with respect to transitory income changes.

Finally, in Table 7, we present results from a two year lead and lag specification similar to the one presented in Table 5, but now allow time effects to differ by income group. In this specification, the price elasticities for the $100,000 and below group are generally substantially

[21] The estimated elasticity with respect to an anticipated price increase in time t+2 is estimated to be .773 for the $1 million and above income group, but this estimate is insignificant due to a large standard error.

larger than for the $100,000 and above income group, but also have much higher standard errors. For the $100,000 and below group in column (1), the only price estimated to be significant and of the correct sign is the elasticity with respect to a transitory one-period price increase at time t, with an estimate of -.654. Persistent and anticipated income elasticities for this group are also significant and large, and the elasticity with respect to transitory income increases is small. Looking at the $100,000 and up group in column (2), the elasticities are roughly consistent with previous estimates, with significant negative elasticities of -.545 and -.636 for persistent and transitory period t price increases, and insignificant elasticities with respect to anticipated price increases. All income elasticities for this group are again significant, and are somewhat larger than the common time effects specification, though the pattern of larger persistent and anticipated income elasticities and a smaller transitory income elasticity still holds. Looking within the $100,000 and above group, only for the highest income group does an anticipated price increase have a significant elasticity, with an estimate of .714 for an anticipated price increase at time t+2. All income elasticities within these groups are again significant, and are larger than their respective magnitudes in Table 4, but follow the same general pattern.

Conclusions

In this study, we have estimated a fairly flexible model of the effects of price and income on charitable giving, allowing for up to two lags and leads of changes in price and income to affect current giving, controlling for fixed effects and allowing for different responsiveness to incentives by people at different income levels, and in some cases controlling for different time paths of unobservable influences on charity across income groups. The use of a federal-state tax calculator in conjunction with Treasury panel data spanning many federal and state tax reforms and containing a large selection of high income people enables us to follow such a flexible approach and to implement a more demanding identification strategy than has been previously used in the literature. We find evidence of a statistically significant but modest elasticity of charitable giving with respect to persistent changes in price among upper-income people. The estimates also seem quite consistent with the permanent income hypothesis, including significant and sizable responses to both persistent and predictable future changes in income, and small (though still significant) responses to transitory fluctuations in income. Perhaps the most surprising finding is that the estimates reveal no substantial evidence of re-timing of giving in response to seemingly predictable changes in tax incentives, especially given that people seem to be responding to changes in tax liability in advance. In future work, further efforts to consider how this may be reconciled with the obvious spike in giving among the highest income taxpayers in 1986 may be fruitful, and efforts to use legislative histories of various federal and state tax reforms to distinguish which reforms were most likely to be anticipated in advance might be productive as well. In any event, the estimates in our present paper do suggest that, for high-income taxpayers at least, there is fairly robust evidence of at least a modest effect of tax incentives on the quantity of charitable giving, even under more demanding efforts to allow for various forms of potential omitted variable bias than the previous literature has attempted.

Table 1 -- Descriptive Statistics

Variable	Description	Mean	Std. Dev.
Charitable giving (G)	Total charitable contributions	85,244	1,053,917
ln(P)	Actual log price of giving (defined in text)	-0.42	0.19
$\ln(P_0)$	First dollar log price of giving (defined in text)	-0.45	0.19
y	After-tax income, defined as pre-tax income minus federal and state income tax liabilities, minus tax savings from charitable contributions.	1,089,342	5,873,376
married	Dummy equal to 1 if taxpayer is married filing jointly	0.85	0.36
age	Age of primary taxpayer	51.47	12.81
kids	Number of kids at home	0.45	0.85
othdeps	Number of other dependents	0.62	1.05
ln(Prst)	Effect of state retail sales tax on relative price of charity	-0.05	0.01
ln(houseprice)	State log median real housing price	11.97	0.37
unemp	State unemployment rate	0.06	0.02
church	Share of state attending church weekly, 2006	0.39	0.08
govex	State and local government spending as a share of state personal income	0.18	0.03

Table depicts unweighted means. All dollar figures are in constant year 2007 dollars, adjusted for inflation using the CPI-U.

Table 2 -- Number of observations, and distribution by average income of taxpaying unit while in sample

	N
Full sample:	495,670
By average income:	
Less than $50,000	20,109
$50,000 - $100,000	98,982
$100,000 - $200,000	105,206
$200,000 - $500,000	81,167
$500,000 - $1,000,000	65,752
$1,000,000 and above	124,454
Number of unique taxpaying units	55,008

Average income is in constant year 2007 dollars, adjusted for inflation using the CPI-U.

Table 3 -- Estimated elasticities of charitable giving: pooled cross section approach

Dependent variable: lnG(t)	(1)	(2)	(3)	(4)	(5)
lnP(t)	-0.860	-0.857	-1.259	-0.396	-1.130
	(0.119)**	(0.104)**	(0.667)	(0.705)	(0.682)
lny(t)	0.823	0.827	0.798	0.533	0.804
	(0.018)**	(0.016)**	(0.039)**	(0.174)**	(0.026)**
age	0.020	0.021	0.017	0.031	0.021
	(0.003)**	(0.003)**	(0.004)**	(0.005)**	(0.004)**
(age/100) squared	1.020	0.989	1.319	-0.994	1.161
	(0.299)**	(0.300)**	(0.355)**	(0.530)	(0.395)**
married	0.203	0.196	0.192	0.083	0.287
	(0.026)**	(0.024)**	(0.032)**	(0.083)	(0.036)**
kids	0.122	0.120	0.130	0.097	0.138
	(0.007)**	(0.007)**	(0.013)**	(0.019)**	(0.011)**
othdeps	0.103	0.103	0.105	0.082	0.114
	(0.007)**	(0.007)**	(0.006)**	(0.024)**	(0.007)**
ln(Prst)		-1.430	-1.978	-1.978	-1.611
		(0.841)	(1.305)	(1.609)	(1.194)
ln(houseprice)		-0.028	-0.061	0.290	-0.151
		(0.056)	(0.092)	(0.092)**	(0.086)
unemp		-1.055	-0.887	1.236	-1.885
		(0.804)	(1.394)	(1.247)	(1.437)
church		0.825	0.749	1.574	0.528
		(0.250)**	(0.423)	(0.406)**	(0.439)
govex		1.806	1.581	1.748	1.760
		(0.787)*	(1.558)	(1.699)	(1.505)
Year dummies?	Yes	Yes	Yes	Yes	Yes
Income classes:	All	All	All	Less than $100,000	$100,000 and above
Price instrument:	1st-dollar	1st-dollar	State price	State price	State price
Clustering by:	State and income class	State and income class	State	State	State

Robust clustered standard errors in parentheses.
* significant at 5%; ** significant at 1%

Table 4 -- Estimated elasticities of charitable giving: fixed effects with two lags and one lead of price and income changes, assuming time effects are common across income classes

Elasticity of charitable giving with respect to:	(1)	(2)	(3)	(4)	(5)
Persistent price increase	-0.616 (0.130)**	-0.466 (0.118)**	-0.677 (0.149)**	-0.440 (0.124)**	-1.000 (0.170)**
Transitory one-period price increase at time t	-0.676 (0.066)**	-0.620 (0.054)**	-0.694 (0.072)**	-0.557 (0.073)**	-0.797 (0.088)**
Anticipated price increase at time t+1	0.106 (0.172)	0.368 (0.155)*	0.043 (0.192)	0.235 (0.195)	-0.191 (0.236)
Persistent income increase	0.638 (0.059)**	0.690 (0.058)**	0.672 (0.061)**	0.742 (0.058)**	0.640 (0.085)**
Transitory one-period income increase at time t	0.197 (0.019)**	0.190 (0.049)**	0.204 (0.021)**	0.135 (0.037)**	0.226 (0.024)**
Anticipated income increase at time t+1	0.348 (0.075)**	0.366 (0.109)**	0.365 (0.081)**	0.494 (0.104)**	0.319 (0.105)**
Income classes:	All	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table 5 -- Estimated elasticities of charitable giving: fixed effects with two lags and two leads of price and income changes, assuming time effects are common across income classes

Elasticity of charitable giving with respect to:	(1)	(2)	(3)	(4)	(5)
Persistent price increase	-0.470	-0.426	-0.522	-0.915	-0.591
	(0.191)*	(0.224)	(0.229)*	(0.379)*	(0.265)*
Transitory one-period price increase at time t	-0.619	-0.669	-0.623	-0.598	-0.717
	(0.065)**	(0.048)**	(0.071)**	(0.093)**	(0.088)**
Anticipated persistent price increase at time t+1	0.138	0.413	0.065	-0.351	0.092
	(0.221)	(0.294)	(0.249)	(0.398)	(0.293)
Anticipated price increase at time t+2	0.401	0.294	0.389	-0.774	0.773
	(0.355)	(0.414)	(0.428)	(0.981)	(0.521)
Persistent income increase	0.855	0.844	0.881	1.205	0.801
	(0.134)**	(0.174)**	(0.130)**	(0.194)**	(0.163)**
Transitory one-period income increase at time t	0.222	0.193	0.226	0.112	0.250
	(0.015)**	(0.053)**	(0.017)**	(0.043)**	(0.018)**
Anticipated income increase between t and t+2	0.549	0.538	0.570	1.034	0.470
	(0.147)**	(0.231)*	(0.149)**	(0.259)**	(0.179)**
Income classes:	All	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table 6 -- Estimated elasticities of charitable giving: fixed effects with two lags and one lead of price and income changes, allowing heterogeneous time effects across income classes

Elasticity of charitable giving with respect to:	(1)	(2)	(3)	(4)
Persistent price increase	-0.032	-0.781	-0.487	-0.742
	(0.308)	(0.151)**	(0.234)*	(0.108)**
Transitory one-period price increase at time t	-0.395	-0.705	-0.476	-0.816
	(0.070)**	(0.073)**	(0.071)**	(0.072)**
Anticipated price increase at time t+1	0.393	-0.023	0.048	-0.034
	(0.344)	(0.197)	(0.304)	(0.151)
Persistent income increase	0.905	0.632	0.726	0.624
	(0.118)**	(0.063)**	(0.098)**	(0.079)**
Transitory one-period income increase at time t	0.153	0.202	0.122	0.238
	(0.045)**	(0.020)**	(0.034)**	(0.024)**
Anticipated income increase at time t+1	0.581	0.338	0.496	0.286
	(0.162)**	(0.080)**	(0.134)**	(0.099)**
Income classes:	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table 7 -- Estimated elasticities of charitable giving: fixed effects with two lags and two leads of price and income changes, allowing heterogeneous time effects across income classes

Elasticity of charitable giving with respect to:	(1)	(2)	(3)	(4)
Persistent price increase	-1.882 (1.070)	-0.545 (0.258)*	-1.136 (0.627)	-0.288 (0.134)*
Transitory one-period price increase at time t	-0.6539 (0.172)**	-0.636 (0.073)**	-0.529 (0.139)**	-0.687 (0.082)**
Anticipated persistent price increase at time t+1	-1.358 (1.033)	0.084 (0.269)	-0.677 (0.589)	0.225 (0.201)
Anticipated price increase at time t+2	-4.447 (2.234)*	0.569 (0.476)	-1.724 (1.611)	0.714 (0.205)**
Persistent income increase	1.980 (0.673)**	0.846 (0.136)**	1.458 (0.354)**	0.829 (0.166)**
Transitory one-period income increase at time t	0.148 (0.074)**	0.223 (0.016)**	0.136 (0.035)**	0.246 (0.019)**
Anticipated income increase between t and t+2	1.695 (0.760)*	0.543 (0.151)**	1.228 (0.393)**	0.497 (0.183)**
Income classes:	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table A.1 -- Coefficient estimates: fixed effects with two lags and one lead of price and income changes, assuming time effects are common across income classes

Dependent variable: lnG(t)	(1)	(2)	(3)	(4)	(5)
lnP(t-1)-lnP(t-2)	-0.029	0.073	-0.035	-0.017	-0.007
	(0.021)	(0.041)	(0.025)	(0.039)	(0.033)
lnP(t)-lnP(t-1)	0.046	0.214	0.027	0.118	0.011
	(0.031)	(0.043)**	(0.037)	(0.051)*	(0.057)
lnP(t)	-0.616	-0.466	-0.677	-0.440	-1.000
	(0.130)**	(0.118)**	(0.149)**	(0.124)**	(0.170)**
lnP(t+1)-ln(Pt)	0.106	0.368	0.043	0.235	-0.191
	(0.172)	(0.155)*	(0.192)	(0.195)	(0.236)
lny(t-1)-lny(t-2)	-0.053	-0.069	-0.057	-0.051	-0.056
	(0.005)**	(0.010)**	(0.005)**	(0.009)**	(0.007)**
lny(t)-lny(t-1)	-0.094	-0.134	-0.103	-0.114	-0.095
	(0.006)**	(0.013)**	(0.007)**	(0.017)**	(0.007)**
lny(0)	0.638	0.690	0.672	0.742	0.640
	(0.059)**	(0.058)**	(0.061)**	(0.058)**	(0.085)**
lny(t+1)-lny(t)	0.348	0.366	0.365	0.494	0.319
	(0.075)**	(0.109)**	(0.081)**	(0.104)**	(0.105)**
(age/100) squared	-0.003	2.190	2.877	2.198	3.494
	(0.530)	(0.114)**	(0.188)**	(0.140)**	(0.207)**
kids	0.033	0.028	0.045	0.040	0.045
	(0.005)**	(0.007)**	(0.005)**	(0.006)**	(0.007)**
othdeps	0.029	0.013	0.032	0.025	0.039
	(0.006)**	(0.007)	(0.006)**	(0.006)**	(0.009)**
ln(Prst)	-0.177	0.402	-0.339	0.341	-0.772
	(0.426)	(0.371)	(0.474)	(0.615)	(0.432)
ln(houseprice)	0.032	0.003	0.020	-0.044	0.079
	(0.035)	(0.035)	(0.043)	(0.038)	(0.067)
unemp	0.667	0.283	0.676	0.101	1.270
	(0.384)	(0.390)	(0.470)	(0.425)	(0.690)
govex	0.248	0.166	0.393	0.365	0.347
	(0.295)	(0.351)	(0.362)	(0.380)	(0.612)
Income classes:	All	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table A.2 -- Coefficient estimates: fixed effects with lags and leads of price and income changes, assuming time effects are common across income classes

Dependent variable: lnG(t)	(1)	(2)	(3)	(4)	(5)
lnP(t-1)-lnP(t-2)	-0.061	0.046	-0.068	-0.091	-0.049
	(0.024)*	(0.073)	(0.031)*	(0.079)	(0.036)
lnP(t)-lnP(t-1)	-0.012	0.169	-0.036	-0.035	-0.034
	(0.042)	(0.092)	(0.051)	(0.088)	(0.068)
lnP(t)	-0.470	-0.426	-0.522	-0.915	-0.591
	(0.191)*	(0.224)	(0.229)*	(0.379)*	(0.265)*
lnP(t+1)-ln(Pt)	0.138	0.413	0.065	-0.351	0.092
	(0.221)	(0.294)	(0.249)	(0.398)	(0.293)
lnP(t+2)-lnP(t)	0.401	0.294	0.389	-0.774	0.773
	(0.355)	(0.414)	(0.428)	(0.981)	(0.521)
lny(t-1)-lny(t-2)	-0.051	-0.061	-0.051	-0.028	-0.050
	(0.006)**	(0.012)**	(0.006)**	(0.010)**	(0.008)**
lny(t)-lny(t-1)	-0.085	-0.113	-0.085	-0.059	-0.081
	(0.008)**	(0.018)**	(0.010)**	(0.030)*	(0.011)**
lny(t)	0.855	0.844	0.881	1.205	0.801
	(0.134)**	(0.174)**	(0.130)**	(0.194)**	(0.163)**
lny(t+1)-lny(t)	0.549	0.538	0.570	1.034	0.470
	(0.147)**	(0.231)*	(0.149)**	(0.259)**	(0.179)**
(age/100) squared	1.412	2.434	3.108	2.566	3.592
	(0.981)	(0.114)**	(0.181)**	(0.186)**	(0.222)**
kids	0.034	0.021	0.047	0.018	0.057
	(0.005)**	(0.010)*	(0.006)**	(0.010)	(0.008)**
othdeps	0.026	0.010	0.028	0.008	0.039
	(0.007)**	(0.009)	(0.008)**	(0.009)	(0.012)**
ln(Prst)	-0.374	0.224	-0.590	0.607	-1.581
	(0.741)	(0.600)	(0.871)	(1.066)	(1.039)
ln(houseprice)	0.001	0.009	-0.010	-0.061	0.026
	(0.036)	(0.033)	(0.044)	(0.043)	(0.070)
unemp	0.760	0.335	0.804	0.640	1.249
	(0.426)	(0.530)	(0.481)	(0.638)	(0.773)
govex	0.193	0.238	0.255	0.470	0.209
	(0.326)	(0.421)	(0.395)	(0.545)	(0.653)
Income classes:	All	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table A.3 -- Coefficient estimates: fixed effects with two lags and one lead of price and income changes, allowing heterogeneous time effects across income classes

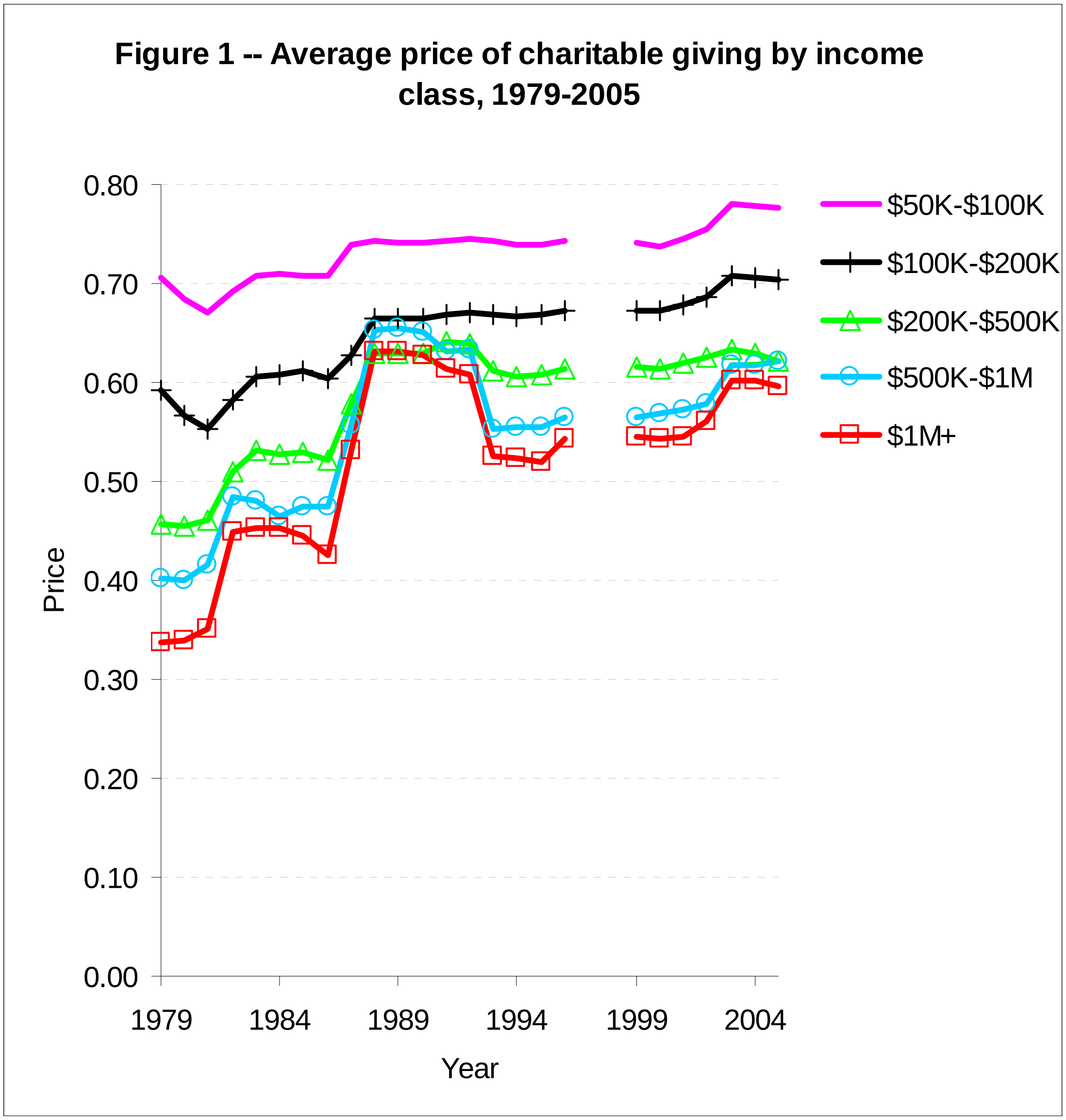
Dependent variable: ln(Gt)	(1)	(2)	(3)	(4)
lnP(t-1)-lnP(t-2)	0.008	-0.020	-0.048	-0.038
	(0.041)	(0.025)	(0.036)	(0.032)
lnP(t)-lnP(t-1)	0.030	0.054	0.059	-0.108
	(0.060)	(0.037)	(0.047)	(0.056)
lnP(t)	-0.032	-0.781	-0.487	-0.742
	(0.308)	(0.151)**	(0.234)*	(0.108)**
lnP(t+1)-ln(Pt)	0.393	-0.023	0.048	-0.034
	(0.344)	(0.197)	(0.304)	(0.151)
lny(t-1)-lny(t-2)	-0.080	-0.051	-0.047	-0.058
	(0.012)**	(0.005)**	(0.008)**	(0.007)**
lny(t)-lny(t-1)	-0.170	-0.092	-0.107	-0.099
	(0.019)**	(0.006)**	(0.015)**	(0.007)**
lny(t)	0.905	0.632	0.726	0.624
	(0.118)**	(0.063)**	(0.098)**	(0.079)**
lny(t+1)-lny(t)	0.581	0.338	0.496	0.286
	(0.162)**	(0.080)**	(0.134)**	(0.099)**
(age/100) squared	2.191	-0.198	-1.121	3.330
	(0.169)**	(0.593)	(1.019)	(0.266)**
kids	0.013	0.039	0.028	0.036
	(0.006)*	(0.005)**	(0.006)**	(0.008)**
othdeps	0.011	0.037	0.024	0.043
	(0.008)	(0.006)**	(0.007)**	(0.009)**
ln(Prst)	0.144	-0.378	0.384	-1.490
	(0.311)	(0.465)	(0.543)	(0.589)*
ln(houseprice)	0.077	0.029	-0.024	0.177
	(0.037)*	(0.039)	(0.033)	(0.078)*
unemp	0.596	0.583	0.084	-0.336
	(0.255)*	(0.429)	(0.400)	(0.524)
govex	0.591	0.282	0.365	1.456
	(0.339)	(0.338)	(0.334)	(0.522)**
Income classes:	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses.
* significant at 5%; ** significant at 1%

Table A.4 -- Coefficient estimates: fixed effects with two lags and two leads of price and income changes, allowing heterogeneous time effects across income classes

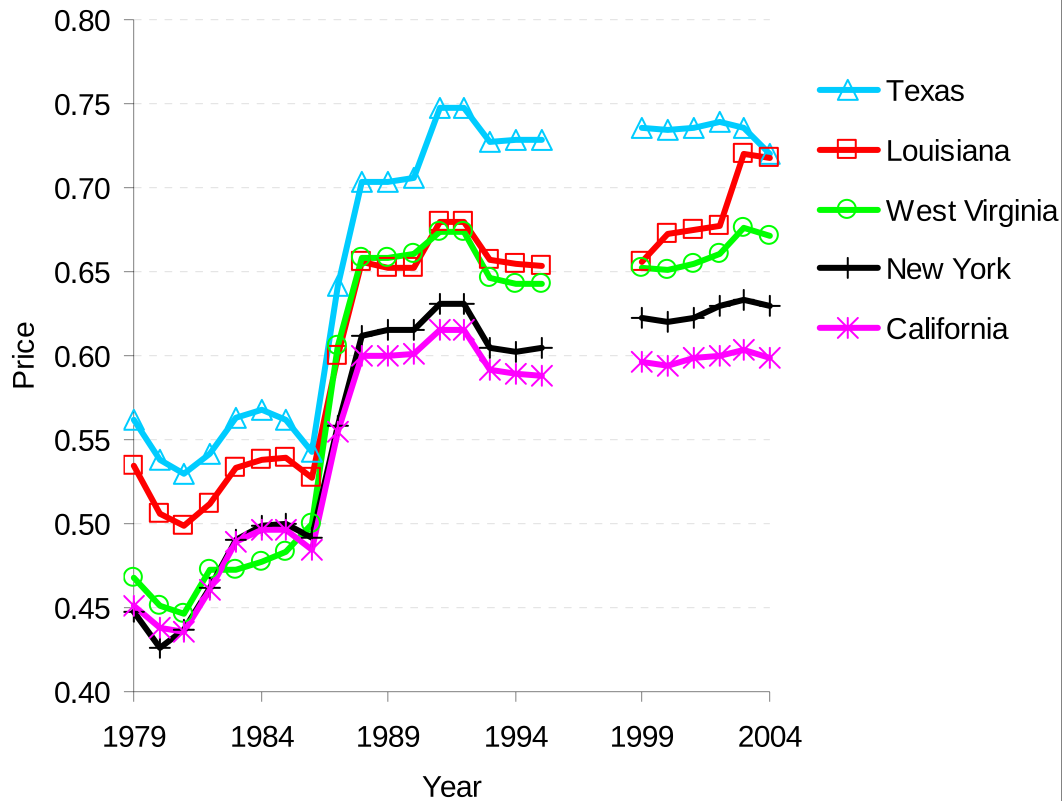
Dependent variable: ln(Gt)	(1)	(2)	(3)	(4)
lnP(t-1)-lnP(t-2)	0.016	-0.055	-0.070	-0.071
	(0.092)	(0.028)	(0.071)	(0.047)
lnP(t)-lnP(t-1)	-0.130	-0.007	-0.070	-0.174
	(0.158)	(0.050)	(0.081)	(0.094)
lnP(t)	-1.882	-0.545	-1.136	-0.288
	(1.070)	(0.258)*	(0.627)	(0.134)*
lnP(t+1)-ln(Pt)	-1.358	0.084	-0.677	0.225
	(1.033)	(0.269)	(0.589)	(0.201)
lnP(t+2)-lnP(t+1)	-4.447	0.569	-1.724	0.714
	(2.234)*	(0.476)	(1.611)	(0.205)**
lny(t-1)-lny(t-2)	-0.045	-0.047	-0.042	-0.050
	(0.027)	(0.006)**	(0.010)**	(0.008)**
lny(t)-lny(t-1)	-0.137	-0.080	-0.093	-0.085
	(0.040)**	(0.009)**	(0.021)**	(0.010)**
lny(t)	1.980	0.846	1.458	0.829
	(0.673)**	(0.136)**	(0.354)**	(0.166)**
lny(t+1)-lny(t)	1.695	0.543	1.228	0.497
	(0.760)*	(0.151)**	(0.393)**	(0.183)**
(age/100) squared	2.887	1.156	7.493	3.125
	(0.376)**	(1.064)	(3.910)	(0.298)**
kids	-0.038	0.041	0.019	0.057
	(0.027)	(0.006)**	(0.008)*	(0.008)**
othdeps	-0.035	0.032	0.011	0.028
	(0.027)	(0.008)**	(0.009)	(0.013)*
ln(Prst)	0.640	-0.691	0.652	-3.889
	(0.982)	(0.897)	(1.013)	(1.087)**
ln(houseprice)	-0.028	-0.009	-0.084	0.043
	(0.086)	(0.040)	(0.053)	(0.090)
unemp	0.025	0.717	0.664	-0.002
	(0.637)	(0.485)	(0.477)	(0.717)
govex	0.014	0.143	0.504	2.197
	(0.636)	(0.379)	(0.551)	(0.621)**
Income classes:	Less than $100,000	$100,000 and above	$100,000 - $500,000	$1 million and above

Robust standard errors, with clustering by state and income class, in parentheses. * significant at 5%; ** significant at 1%.

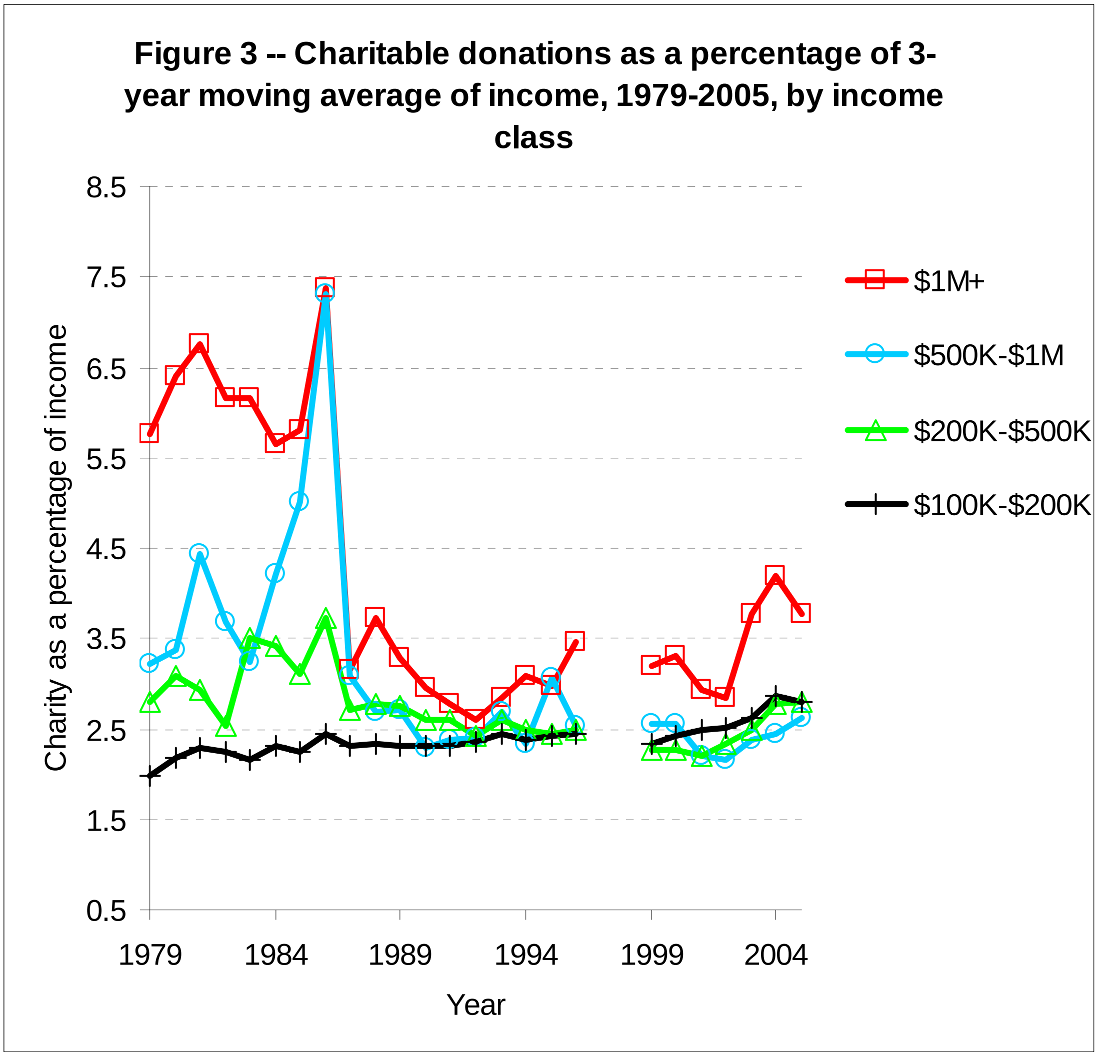


Graph depicts the "first dollar" price (calculated setting charity to zero). Sample includes taxpayers who are in the panel data as exogenous itemizers without change in marital status for at least 6 consecutive years, and whose itemized deductions less charity exceed the largest standard deduction or zero bracket amount during the sample period in real terms. Taxpayers are classified into income categories based on current income in constant year 2007 dollars, replacing realized capital gains with 6% of capitalized dividends.

Figure 2 -- Average price of charitable giving for married couples with income between $200,000 and $500,000, selected states, 1979-2004



Graph depicts the price of charitable giving calculated on a random sample of married couples with incomes between $200,000 and $500,000 from the 1985 SOI cross section. The same set of taxpayers are used to calculate tax rates for each state, and their characteristics except for state taxes are held constant in real terms across states and years. In calculating price, charity is set to zero, but 65% of actual non-cash donations are included for purposes of calculating AMT rates where applicable.



Sample includes taxpayers who are in the panel data as exogenous itemizers without change in marital status for at least 6 consecutive years, and whose itemized deductions less charity exceed the largest standard deduction or zero bracket amount during the sample period in real terms. Uses a moving average of current and up to two lags of income when available, in constant year 2007 dollars, replacing realized capital gains with 6% of capitalized dividends.

Appendix 1: Discount factor for the capital gains tax rate

As noted above, the price of charitable giving depends on the ordinary marginal tax rate applying to deductions, the tax savings from possibly avoiding a capital gains realization at some point in the future, and the alternative minimum tax that may be imposed on capital gains on donations of appreciated assets. This requires knowing the gain-to-value ratio on donated non-cash property, and a discount factor for the capital gains rate reflecting the present value benefits of deferred realization and step-up-in-basis at death. Because we have data for a limited number of years (1989-92) on both non-cash donations and capital gains on those donations for AMT taxpayers, we are able to estimate an average value of 0.65 for *a*. There is relatively little evidence available to determine a reasonable value for the discount factor *d* applied to the capital gains rate. The previous literature has generally ignored *mtrcharcg*, and has assumed that the product $a*d$ = 0.5. The 0.5 comes from papers by Feldstein (1975) and Feldstein and Clotfelter (1976) that estimated it as a parameter in a cross-sectional charitable giving equation using maximum likelihood methods. If we were to follow this rule of thumb, a value of a=0.65 would imply d=0.77. We attempt to improve on this by inferring a reasonable value for *d* based on recent research by Ivkovic, Poterba, and Weisbenner (2005). Based on five years of data on individual's asset trades from a brokerage house, they estimate the probability of selling an asset at each point over the five year period conditional on the accumulated capital gains. Using this in conjunction with an assumed statutory rate of 28% and an assumed 1% monthly nominal rate of appreciation (which is roughly consistent with the experience of the S&P500 1979-2005), they estimate an effective marginal tax rate on gains of 24% if assets not sold in the first 5 years are sold in year 5, 13% if assets not sold in the first 5 years are sold in year 20, and 0.6% if assets not sold in the first 5 years are held until death 20 years from now. We compute an effective rate on assets sold at any time over 20 years by linearly interpolating between the 24% and 13% rates, assuming probabilities of sale in 5-year periods from year 5 to year 20 are proportional to to sales of assets with that holding period as a share of total sales of assets with holding periods between 5 and 20 years, reported Auten and Wilson (1999). We then compute the weighted average of that and the 0.6% rate on gains held until death in 20 years, where the weight on 0.6% is the estimated revenues that would be raised form taxing unrealized gains at death in 1998 (from Poterba and Weisbenner 2003) divided by actual revenues raised from taxing capital gains, from <http://www.treas.gov/offices/tax-policy/library/capgain2-2008.pdf>. The resulting effective rate is 19.5%, implying a discount factor of 19.5/28 or approximately 0.7.

Appendix 2: Sources for control variables

To construct ln(houseprice), we start with the Median house price each state from 2000 decennial census, and grow it forwards and backwards by state-specific OFHEO repeat-sales housing price index. See U.S. Bureau of the Census (2004) and OFHEO (2006). State unemployment rate is from the U.S. Bureau of Labor Statistics website <http://www.bls.gov>. The "church" variable is the share of state residents who say they "attend church or synagogue once a week or almost every week," from a Gallup poll cited in San Diego Union-Tribune (2006). Govex is direct current expenditures of state and local governments as a share of state personal income, obtained from the Urban-Brookings Tax Policy Center State and Local Government Finances database. State retail sales tax is taken from the University of Michigan's World Tax Database, updated by the authors through 2005 using Research Institute of America's *All States Tax Handbook*.

References

Auten, Gerald, and Janette Wilson. 1999. "Sales of Capital Assets Reported on Individual Tax Returns, 1985." *Statistics of Income Bulletin* 18 (Spring), pp. 355-88.

Auten, Gerald, James Cilke, and William Randolph. 1992. "The Effects of Tax Reform on Charitable Contributions." *National Tax Journal*. 45 (3), 267-290.

Auten, Gerald, Holger Sieg, and Charles Clotfelter. 2002. "The Distribution of Charitable Giving, Income and Taxes: An Analysis of Panel Data." *American Economic Review*, Vol. 92, No. 1 (March), 371-382.

Auten, Gerald, and David Joulfain. "Charitable Contributions and Intergenerational Transfers." *Journal of Public Economics*, January 1996, v. 59, iss. 1, pp. 55-68.

Bakija, Jon, William Gale, and Joel Slemrod. 2003. "Charitable Bequests and Taxes on Inheritances and Estates: Aggregate Evidence from across States and Time." *American Economic Review*, May 2003, v. 93, iss. 2, pp. 366-70

Bakija, Jon. 2002. "Distinguishing Transitory and Permanent Price Elasticities of Charitable Giving with Pre-Announced Changes in Tax Law." Working Paper, Williams College. <http://wso.williams.edu/~jbakija/charity_jb2.pdf>

Bakija, Jon. 2008. "Documentation for a Comprehensive Historical U.S. Federal and State Income Tax Calculator Program" Working paper, Williams College. <http://www.williams.edu/Economics/papers/bakijaDocumentation_IncTaxCalc.pdf>

Bakija, Jon, and Rob McClelland. 2004. "Timing vs. Long-run Charitable Giving Behavior: Reconciling Divergent Approaches and Estimates." Working Paper.

Barrett, K.S., McGuirk, A.M., Steinberg, R. 1997. "Further Evidence on the Dynamic Impact of Taxes on Charitable Giving." *National Tax Journal*. 50 (2), 321-334.

Bogart, William T., and William M. Gentry. 1995. "Capital Gains Taxes and Realizations: Evidence from Interstate Comparisons." *Review of Economics and Statistics*, v77, n2 (May): 267-82.

Broman, A.J. 1989. "Statutory Tax Rate Reform and Charitable Contributions: Evidence from a Recent Period of Reform." *Journal of the American Taxation Association*. (Fall), 7-21.

Brown, Eleanor. 1997. "Taxes and Charitable Giving: Is There a New Conventional Wisdom?" *Proceedings of the Eighty-Ninth Annual Conference on Taxation held under the auspices of the National Tax Association, November 10-12*, 1996. pp. 153-59

Burman, Leonard E., William G. Gale, and Jeffrey Rohaly. 2003. "The Expanding Reach of the Individual Alternative Minimum Tax." *Journal of Economic Perspectives*, Spring 2003, v. 17, iss. 2, pp. 173-86.

Center on Philanthropy at Indiana University. 2007. *Giving USA 2007*. Glennview, IL: Giving USA Foundation.

Cilke, James, Julie-Anne Cronin, Matthew Eichner, Janet McCubbin, James R. Nunns, and Paul Smith. (1999). “Developing a Panel Model for Tax Analysis.” Unpublished manuscript prepared for the 92nd Annual Conference on Taxation, National Tax Association.

Deaton, A., Muellbauer, J. 1980. "An Almost Ideal Demand System." *American Economic Review*. 70 (3), 323-326.

Feenberg, D. 1987. "Are Tax Price Models Really Identified: The Case of Charitable Giving." *National Tax Journal*. 40 (4), 629-633.

Feldstein, Martin S. and Clotfelter, Charles T. “Tax Incentives and Charitable Contributions in the United States: A Microeconometric Analysis.” *Journal of Public Economics*, January– February 1976, 5(1–2), pp. 1–26.

Feldstein, Martin. "The Income Tax and Charitable Contributions: Part I -- Aggregate and Distributional Effects." *National Tax Journal* 28 (March 1975): 81-100

Goolsbee, Austan. Goolsbee, Austan. 2000. “What Happens When You Tax the Rich? Evidence from Executive Compensation.” *Journal of Political Economy*. Vol. 108, No. 2.

Ikovic, Zoran, James Poterba, and Scott Weisbenner. 2005. "Tax-Motivated Trading by Individual Investors." *American Economic Review*. Vol. 95 (Dec.) pp. 1605-1630.

Karlan, Dean and John List. 2006. “Does Price Matter in Charitable Giving? Evidence From a Large-Scale Natural Field Experiment.” NBER Working Paper No. 12338.

OFHEO (Office of Federal Housing Enterprise Oversight). 2006. *3rd Quarter 2006 Manipulatable Data for Individual State Index* <http://www.ofheo.gov/download.asp>.

Peloza, John and Piers Steele. (2005), "The Price Elasticities of Charitable Contributions: A Meta Analysis." *Journal of Public Policy & Marketing* 24(2): 260-272.

President’s Advisory Panel on Federal Tax Reform. 2005. “Simple, Fair, and Pro-Growth: Proposals to Fix America’s Tax System.” Washington: GPO.

Randolph, W.C. 1995. "Dynamic Income, Progressive Taxes, and the Timing of Charitable Contributions." *Journal of Political Economy*. 103 (4), 709-738.

Saez, Emmanuel. 2004. “The Optimal Treatment of Tax Expenditures.” *Journal of Public Economics*, Vol. 88, pp. 2657– 2684.

San Diego Union-Tribune. 2006. “Church or Synagogue Attendance by State.” May 6. <http://www.signonsandiego.com/uniontrib/20060502/news_lz1n2thelist.html>.

Weber, Michael and Victoria L. Bryant. (2005). “The 1999 Individual Income Tax Return Edited Panel.” in *2005 Proceedings of the American Statistical Association*. Alexandria, VA: American Statistical Association.

U.S. Bureau of the Census. 2004. *Historical Census of Housing Tables*. <http://www.census.gov/hhes/www/housing/census/historic/values.html>.