

The Intergenerational Transmission of Generosity

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Abstract

This paper estimates the correlation between the generosity of adult children and that of their parents using regression models of adult children's charitable giving. The models are estimated using new data on giving that are now part of the *Panel Study of Income Dynamics*. The robustness of the results is checked using several estimation techniques and specification tests, and the strength of the intergenerational giving correlations are compared with intergenerational correlations in income, wealth, and consumption expenditure from the same sample using the same set of controls. We find the religious giving of parents and children to be strongly correlated, as strongly correlated as is their income and wealth. The correlation in the secular giving of parents and children is smaller, similar in magnitude to the intergenerational correlation in consumption. In contrast to commonplace notions, we find no evidence that parental religious giving is positively associated with children's secular giving.

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Economic research on the responsiveness of charitable giving to tax incentives tends to be agnostic about why people give to charity. This question is central in research on government crowd-out of private giving, with many arguing that people get a private benefit, a warm glow, from giving.¹ But where would such a feature of preferences come from? A plausible answer is that parents attempt to influence their children's preferences for giving, with more generous parents investing more in the development of their children's generosity. This implies a correlation between the giving of parents and children. And to the extent that parent giving produces this correlation by directly influencing children's preferences, tax incentives encouraging parents to give will *ceteris paribus* increase giving in future generations.

We estimate the correlation between the giving of parents and children using regression models of adult children's giving in which the primary variables of interest describe their parent's current giving. The models are estimated using new data from the 2001 wave of the *Center on Philanthropy Panel Study (COPPS)*, an ongoing module in the *Panel Study of Income Dynamics (PSID)* that we designed in collaboration with Michigan's Survey Research Center.² *COPPS* provides the only U.S. data describing the charitable giving of both parents and children.

¹ See Vesterlund (forthcoming) for an essay on the economics of why people give and Andreoni (2004) for a survey of the economics of philanthropy. Andreoni (1989) proposes warm glow to resolve the discrepancy between a purely altruistic theory of giving and the empirical evidence inconsistent with that theory. Ribar and Wilhelm (2002) argue that warm glow is the motive affecting charitable giving on the margin. As an alternative to warm glow, Duncan (2004) develops a theory in which people give because they care about the change they themselves effect.

² Designers of *COPPS* from Michigan's Survey Research Center include Tom Gonzales, James Morgan, Robert Schoeni, and Frank Stafford.

These data also are higher quality than those available from other recent U.S. surveys of giving (Wilhelm 2003). Because the *PSID* contains high quality data on determinants of giving--- income, wealth, and socioeconomic characteristics---we can estimate the correlation in parent-child giving net of any association that would arise purely through intergenerational similarity in these other determinants.

Even when controlling for these other determinants, the intergenerational correlation in religious giving remains strong. The intergenerational correlation in secular giving is much smaller, though still statistically significant. In contrast to commonly stated opinions about the influence of religion on philanthropic behavior, we find virtually no evidence that parents' religious giving is positively correlated with children's secular giving. Perhaps more surprising, parents' secular giving is negatively and significantly correlated with children's religious giving, though the correlation is small.

I. Conceptual Framework

The economic approach to the transmission of generosity begins with a description of plausible parental objectives and the actions available to parents in pursuit of those objectives. Several parental objectives are a priori reasonable. For instance consider a parent who has altruistic concern over her son's utility (occasionally we will use female pronouns for the parent and male pronouns for the child to ease discussion). She will devote resources to raise her son's generosity if being more generous increases his utility.³ Alternatively, if a parent values her

³ In his *Theory of Moral Sentiments*, Adam Smith argues that people are made happy not so much by goods and services, but by being beloved, admired, and respected; that for most people being beloved, admired, and respected is achieved by being virtuous; and that observable

child's gift itself she will devote resources to increase his giving regardless of whether giving makes him happier. A parent might be so motivated for religious reasons (to help her son toward salvation), for moral reasons (taking an Aristotelian view that it is important to be good as well as happy), or because she values future provision of the charitable good (similar to Becker's 1996 model of parents instilling guilt in their children to secure future assistance). Lastly, a parent may seek to replicate her own preferences, acting to make her son's generosity taste parameter similar to her own rather than attempting to affect his utility level or amount of giving.

Research in experimental psychology on the development of prosocial behavior suggests a range of actions available to increase children's generosity (see the reviews by Eisenberg and Fabes 1998 and Grusec 1991). The most robust result emerging from this literature is that role modeling a desired helping behavior has a strong effect on whether children adopt that behavior. Other socialization techniques—such as empathy-based induction and dispositional praise⁴—can also influence whether children adopt helping behavior. All of these techniques are available to a parent who wishes to instill generosity in her children. Under the maintained assumptions that a parent's preference for instilling generosity varies directly with her own generosity, and that parental giving later in life is a good indication of their generosity during the child rearing years, the *COPPS* data allow us to explore whether parents affect their children's charitable giving.

acts of virtue—including generosity—are the means by which others become aware of one's virtue, and in turn respond with their approbation.

⁴ Empathy-based induction is motivating children to help by using reasoned explanations that direct attention toward the benefits their help will generate in the lives of others (see Eisenberg-Berg and Geisheker 1979; McGrath, Wilson and Frassetto 1995). Dispositional praise is responding to a child's helping behavior by making positive comments about the child's helpful character rather than the child's helpful act (see Grusec and Redler 1980).

II. Empirical Methods

A. The Model

To make these maintained assumptions clear, to explain how the parent–child giving correlation relates to the intergenerational transmission of the underlying taste for generosity, and to establish a framework within which we can discuss several econometric issues, we begin with a simple model of the transmission of generosity:

$$\gamma_{i2} = m c_{1,it} + \tau \gamma_{i1} + v_i \quad (1)$$

where γ_1 and γ_2 are preference parameters driving charitable giving of the parent and child, $c_{1,t}$ is the log of parent giving during the childhood years t , v represents random influences on children’s generosity, and m and τ are parameters determining the strength of transmission (i indexes the parent-child pair but will now be dropped to ease notation). The term $m c_{1,t}$ represents the effect of the parent’s role modeling of charitable giving on the generosity of her son; we assume that parental giving during the childhood years most strongly influences a child’s preferences. The term $\tau \gamma_1$ represents automatic transmission mechanisms such as genetic similarity in generosity, but it also approximates relatively low-cost socialization techniques such as empathy-based induction and dispositional praise (in short, all mechanisms that are either perfectly or approximately unresponsive to the incentives parents face). We separate role modeling from other transmission mechanisms because of its importance in the experimental psychology literature and its potential policy relevance: an effect of parental giving on the giving of the next generation suggests a multiplier effect exploitable by policy-makers. The error term v

captures all other unobservable formative influences on the child's generosity and is assumed to be uncorrelated with γ_I and $c_{I,t}$. Unobservable influences correlated with $c_{I,t}$ are modeled by γ_I .

Parent charitable giving during the childhood years is:

$$c_{I,t} = \alpha_I \gamma_I + \delta_I y_{I,t} + u_{I,t} \quad (2)$$

where $y_{I,t}$ is log income, $u_{I,t}$ is an error term capturing unobservable effects on parental giving that are uncorrelated with γ_I and $y_{I,t}$, and α_I and δ_I are scalar parameters.⁵ To ease notational burden in this section we do not include controls other than income; how they would enter the analysis can be seen by following $y_{I,t}$ and we will include additional controls in the empirical work. A similar model describes the child's giving during adulthood:

$$c_{2,t+1} = \alpha_2 \gamma_2 + \delta_2 y_{2,t+1} + u_{2,t+1}. \quad (3)$$

We cannot estimate (1), (2), and (3) directly because the generosity variables γ_I and γ_2 are unobservable, and we lack data on $c_{I,t}$. Our approach is to use the $t + 1$ version of (2)---the model of parent's giving that is contemporaneous with the child's giving---to solve for γ_I as a function of $c_{I,t+1}$ (and other variables) and then along with (1), eliminate γ_2 from (3). Start by

⁵ An economic approach to transmission would also model $c_{I,t}$ as a function of the parent's expectations at time t of her son's future income. The comparative statics of $c_{I,t}$ with respect to son's future income depend on which parental objective motivates her desire to transmit. Because our data do not allow us to cleanly adjudicate between parental objectives, we put off including son's future income in our formal model for the time being, but return to this idea at the end of the results section.

substituting (1) and (2) into (3). Then eliminate γ_t from the resulting equation by solving for γ_t in the $t + 1$ version of (2). This yields a model of child giving as a function of parent giving, child income, and other variables, but no unobservable generosity variables:

$$c_{2,t+1} = \rho c_{1,t+1} + \delta_2 y_{2,t+1} - \alpha_2 m \delta_1 [y_{1,t+1} - y_{1,t}] - \alpha_2 \tau \delta_1 \alpha_1^{-1} y_{1,t+1} + \alpha_2 v + u_{2,t+1} - \alpha_2 \tau \alpha_1^{-1} u_{1,t+1} - \alpha_2 m [u_{1,t+1} - u_{1,t}]. \quad (4)$$

where $\rho \equiv \alpha_2 (\tau + m \alpha_1) \alpha_1^{-1}$ is the elasticity of child giving with respect to parent giving; part of ρ arises from the automatic transmission mechanisms and part arises from role modeling.

B. Econometric Approach

We estimate specifications similar to (4), although most of our specifications are without parent controls other than $c_{1,t+1}$. Specifications without parent controls other than $c_{1,t+1}$ allow us to compare our intergenerational giving elasticities to intergenerational income elasticities from the intergenerational income mobility literature. Furthermore, our results are not sensitive to the inclusion of additional parent controls.

We now turn to a discussion of the econometric problems in estimating ρ . Our discussion is organized according to the likely direction of bias the econometric problems produce. We then discuss econometric concerns well-known from the intergenerational income mobility literature.

There are two econometric problems suggesting a potential bias of $\hat{\rho}$ away from zero.

First, if permanent income drives giving but current income is used for $y_{2,t+1}$, measurement error

could leak over to affect $\hat{\rho}$; the permanent component of parent's giving would almost certainly be positively correlated with any unmeasured child permanent income. We attempt to mitigate this potential source of bias by including both controls for children's income averaged over the recent past and controls for their current wealth. Second, $\hat{\rho}$ is potentially biased away from zero to the extent that $c_{1,t+1}$ and $u_{2,t+1}$ are correlated, as would be the case if parents and children are responding to common unobservable influences when making giving decisions. If common unobservables are a problem but less correlated when parents and children live in different states then estimating models with data from parents and children residing in different states will cause $\hat{\rho}$ to drop toward zero.

Corner solutions ($c_{2,t+1} = 0$) suggest that OLS estimates of ρ are potentially biased toward zero. Tobit estimation is the standard approach to handling zero $c_{2,t+1}$ in the charitable giving literature, despite the fact that Tobit estimators are inconsistent unless the underlying error distribution is homoskedastic and normal, and the experience from other applications that the inconsistency can be substantial (e.g., see Chay and Honoré 1998, p.20). We check for departures from homoskedasticity and normality using conditional moment tests (Pagan and Vella 1989) and for the severity of any departures on the estimates using Hausman tests (Newey 1987; Wilhelm 2004). We estimate ρ using several alternative approaches—OLS, nonlinear least squares estimation of exponential models (NLS), symmetrically-censored least squares (SCLS), and censored least absolute deviations (CLAD).⁶ The NLS-exponential model is a

⁶ We use STATA programs written by Jolliffe, Krushelnytsky and Semykina (2001) and Moreira (see Chay and Powell 2001) to estimate the CLAD and SCLS models.

regression of c_2 in levels (not logs) on $\exp(X\beta)$, where the independent variables in X are just as in the other specifications (e.g., log parent giving). This model allows c_2 to converge to zero for small values of $X\beta$ (unlike OLS) without requiring a distributional assumption (unlike Tobit). In principle we prefer either the NLS or CLAD estimators because they are consistent under fewer assumptions. In most cases these approaches yield estimates that do not substantially differ from the Tobits.

Another potential source of bias toward zero is measurement error arising from using $c_{l,t+1}$ to estimate ρ if the earlier $c_{l,t}$ is the parental giving variable that actually produced the role modeling effect. This is the source of the $-\alpha_2 m [u_{l,t+1} - u_{l,t}]$ term in (4)—notice that this term vanishes if there is no role modeling effect ($m = 0$). The bias is mitigated if the covariance between $u_{l,t+1}$ and $u_{l,t}$ is higher, suggesting that measurement error may be less problematic for the subsample of younger children because current parent giving is a better signal of the past giving that influenced preferences. The term $-\alpha_2 \tau \alpha_l^{-1} u_{l,t+1}$ is measurement error that arises because we are attempting to estimate the combination of automatic/low-cost transmission and role modeling whereas $c_{l,t+1}$ is a noisy measure of the latent variable γ_l that models automatic/low-cost mechanisms. Even if we could regress $c_{2,t+1}$ on $c_{l,t}$ (eliminating the $u_{l,t+1} - u_{l,t}$ source of measurement error) we would still have to interpret the resulting estimate as an underestimate of the combined automatic/low-cost transmission and role modeling effect (because $c_{l,t}$ would still be a noisy measure of γ_l) or an overestimate of the role modeling effect on its own (because $c_{l,t}$ is correlated with γ_l).

Corresponding to these two sources of measurement error are the parent variables $-\alpha_2 m \delta_l [y_{l,t+1} - y_{l,t}]$ and $-\alpha_2 \tau \delta_l \alpha_l^{-1} y_{l,t+1}$ appearing on the right-hand side of (4). Because omitting

these terms (as we do in most of our specifications) potentially introduces sources of bias we check the sensitivity of our results to the inclusion of parent variables, especially income. Insensitivity of the results to the inclusion of variables like $y_{l,t+1}$ and $y_{l,t}$ suggests, but does not necessarily imply, that the corresponding measurement error terms $u_{l,t+1}$ and $u_{l,t}$ discussed in the previous paragraph may be causing only minor problems.

Estimates of ρ will also be biased to the extent that v is correlated with $c_{l,t+1}$. That bias will be toward zero if a parent tries to compensate when her son is less generous than she would like (v low) by doing more role modeling ($c_{l,t}$ higher). This kind of negative correlation between v and $c_{l,t}$ would likely imply some negative correlation between v and $c_{l,t+1}$, although probably not as strong.

The intergenerational income mobility literature has shown that attenuation bias and life-cycle bias can push estimates of intergenerational elasticities toward zero (Solon 1999). In that literature attenuation bias arises when a single-year measure of income is used even though transitory fluctuations make it a noisy measure of permanent income (the variable that theory suggests should be used in the regression), and in the present paper attenuation bias arises if the single-year measure of $c_{l,t+1}$ is a noisy measure of parent permanent giving. Although there is little we can do to check attenuation bias directly with *COPPS*, we can get a ballpark indication of the bias by using tax panel data to calculate an attenuation factor. That calculation indicates that the elasticities we estimate should be multiplied by a factor of 2 or more to get a sense of the magnitudes of permanent elasticities. This suggests that attenuation bias is as large here as it is

in the income mobility literature.⁷

Solon describes life-cycle bias as especially severe when the mobility estimates are based on sons in their twenties as opposed to “well into their thirties (p. 1780).” An obvious informal check is to see if the estimated intergenerational giving elasticities fall when the sample is restricted to children in their twenties, but recall that at the same time such an estimate would be expected to rise if measurement error from using $c_{l,t+1}$ for $c_{l,t}$ is mitigated in the younger subsample. Indeed, life-cycle bias and measurement error may be offsetting each other to some extent in the full sample of adult children. Finally we point out that life-cycle bias may be more severe for secular giving because it increases more rapidly than religious giving during the middle and end of the life-cycle (Wilhelm, Rooney and Tempel 2003).

We also know from the intergenerational earnings mobility literature that estimates can be very sensitive to the inclusion of parents who report zero earnings (Solon footnote 14). In light of this, and because a considerable number of parents report zero giving, all of our models include dummy variables for whether parents give at all.

III. The Data

COPPS has several advantages relative to other recent giving surveys: high response rate,

⁷ The calculation follows Solon (p. 1778): under all the simplifying assumptions invoked there the attenuation factor is the ratio of the variances of permanent giving over permanent-plus-transitory giving. Using estimates of these variances from the tax data analyzed by Auten, Sieg and Clotfelter (1999), the attenuation factor is $.4154/ (.4154 + .5652) = .42$; the reciprocal of this is the correction factor used to multiply our estimates so that they reflect permanent elasticities. We stress this is a ballpark indication of attenuation bias: the tax sample is different (different time period and itemizers only), the controls available in tax data to net out observable changes in giving are different, and the variances are for total giving (religious and secular combined).

extremely low occurrence of missing data on giving, and representation of the distribution of giving up to the ninetieth percentile (Wilhelm 2003). In addition, the *PSID* contains high-quality data on income and wealth, both current and past. With the exception of the 1974 *National Study of Philanthropy*, other surveys of giving have low-quality income data, no wealth data, and no data about past income and wealth.

COPPS queries a respondent about her family's "donations specifically for religious purposes or spiritual development, for example to a church, synagogue, mosque, TV or radio ministry;" responses to this question form our religious giving variable. Respondents are directed to "not include donations to schools, hospitals, and other charities run by religious organizations" because donations for these other purposes will be asked about later. We combine the amounts given to all these other purposes in our "secular" giving variable even though some of this giving may be motivated by religious values (e.g., giving to Catholic Charities or the United Jewish Appeal).

Our sample starts with the 3,175 heads and spouses in the 2001 wave who were children in the original 1968 family units or were subsequently born into the *PSID*'s nationally representative subsample (the *SRC* sample). We drop 590 (19 percent) whose parents are no longer responding to the survey. Among the matched parent-child pairs 54 percent are matched with both parents; 271 had parents no longer residing together and in these cases we combine the giving from both parental family units. For the remaining pairs matches with mothers are more prevalent than matches with fathers.⁸ The results are not sensitive to dropping the 271 children

⁸ This is likely due to (i) *PSID* tracking rules that before 1993 tracked sample children 17 and younger following their parents' separation only if the children stayed with the sample parent, and (ii) lower mortality among women.

whose parents no longer reside together, nor the children who could be matched with only one parent.

The main differences between the matched and unmatched children are in age (the averages are 37 and 44) and at the top of the wealth distribution (the 75 th percentiles are \$82,100 and \$135,000). Both are indications that the sample is disproportionately representative of children early in their life-cycles, and this must be kept in mind when interpreting the results in light of the previously discussed potential life-cycle bias. Indeed, matched children are less likely to make charitable contributions than are unmatched children (65 versus 69 percent), and among those who do give, the amounts are somewhat less (\$1,805 versus \$1,968).

We next drop 201 children who have missing data on independent variables we intend to use in our regression models. Table 1 presents giving statistics for the remaining 2,384 (Appendix A contains descriptive statistics for all the variables). The first column lists statistics for the entire sample and indicates that adult children are less likely to give to religious than secular purposes (43 versus 55 percent). However, amounts given to religious purposes (among children who give to religious purposes) are higher than amounts given to secular purposes (among children who give to secular purposes; averages: \$1,783 versus \$795). Columns 2 and 3 split the sample into those whose parents do not give to religious purposes and those whose parents do. Children whose parents give to religious purposes are more likely to give to both religious and secular purposes; they give substantially higher amounts to religion and modestly higher amounts to secular purposes. Columns 4 and 5 split the sample by parents' secular giving. Children whose parents give to secular purposes are themselves more likely to give to secular purposes, and the amounts given are modestly higher. These children are only slightly more

likely to give to religious purposes; there is no difference in amounts given.

Although not shown in the table, children's income, wealth, education, and religious affiliation also vary by whether parents give, indicating the importance of using regressions to net out these influences. Skewness in the distribution of giving is also seen in the table (the medians in square brackets are much smaller than averages), justifying our use of NLS and CLAD estimation techniques that remain consistent even if the underlying errors are asymmetric.

IV. Results

IV.A Main Results

Table 2 presents results from models where the dependent variables are the amounts children give to religious and secular purposes. The rows contain results from different specifications. The dependent variables are in logarithms in all seven rows except for the NLS specifications (rows 3 and 4) where the dependent variables are in levels. The two main independent variables are the log amounts parents give to religious and secular purposes. There are numerous independent variables not displayed: dummy variables for whether the parent gives to religious purposes and whether the parent gives to secular purposes, children's current income, income averaged over the recent past (up to five years if available), wealth excluding home equity, home equity (and two dummy variables to indicate if the wealth variables are zero), education, religious affiliation, and other demographic variables (all dollar amount variables are in natural logs). Results for the variables not displayed are available upon request (Appendix B).

For each dependent variable (a double-width column) and each specification (row) the table lists the coefficients on the two main independent variables; each pair of coefficients comes

from one regression. Coefficients from models of children's religious giving are in the first double-width column. Row 1 presents the Tobit estimates of $\partial E(y|\mathbf{x})/\partial x_j$ —the marginal effect on the observable outcome evaluated at the means. The elasticity of children's religious giving with respect to parents' religious giving is .26; the cross elasticity of children's religious giving with respect to parents' secular giving is $-.07$ (to ease discussion we will refer to these elasticities as the religious elasticity and the religious-with-respect-to-secular elasticity). The comparable OLS elasticities in row 2 are slightly larger. The NLS-exponential elasticities in row 3 are much larger, but this difference goes away when we re-estimate after dropping the top parent giver and the top child giver (row 4), suggesting NLS sensitivity to outliers.⁹

Table 2 continues with specifications that examine the sensitivity of the results to homoskedastic and normal error assumptions. Row 5 contains the same specification already discussed in row 1, but presents the Tobit coefficients describing elasticities of the latent dependent variable; these are the estimates comparable to SCLS and CLAD. Row 6 presents the SCLS estimates (consistency requires symmetry of the errors but not homoskedasticity). The estimated elasticities (.53 and $-.22$) are fairly close to those from Tobit. Row 7 presents CLAD estimates for the median (CLAD relaxes the requirement of symmetric errors). The religious elasticity appears similar to the Tobit, while the religious-with-respect-to-secular elasticity is more negative.

Turning to the secular giving models in column 2, the Tobit elasticity of children's secular giving with respect to parents' secular giving (the secular elasticity) in row 1 is .08. The

⁹ Drop the same observations in the Tobit and OLS models and the results hardly change. We select these observations to drop based on breaks in the data.

OLS elasticity in row 2 is slightly higher. In the NLS-exponential model, the secular elasticity is smaller and insignificant, whereas the cross elasticity of children's secular giving with respect to parents' religious giving (the secular-with-respect-to-religious elasticity) is significantly negative. Row 4 drops the top parent and two top child givers (again based on breaks in the data); the secular elasticity returns to Tobit-OLS levels, but the significantly negative secular-with-respect-to-religious elasticity remains. The Tobit, SCLS, and CLAD estimates (rows 5-7) are similar: .12 to .13 for the secular elasticity and $-.05$ to $-.079$ for the secular-with-respect-to-religious elasticity. Only the secular elasticities are statistically significant.

In both the religious and secular giving models elasticity estimates are similar for Tobit, SCLS, and CLAD specifications (perhaps except for the religious-with-respect-to-secular elasticity) despite the rejections of normality and homoskedasticity by zero conditional moment tests (rows 8 and 9). Hausman tests (rows 10 and 11) indicate that the departures from normality and homoskedasticity are for the most part inconsequential in terms of the slope estimates: there is no significant difference between SCLS or CLAD and Tobit in the religious giving model, or between CLAD and Tobit in the secular giving model. There is a significant difference between SCLS and Tobit in the secular model but even here χ^2_1 tests (not shown) separately comparing the two secular elasticities and the two secular-with-respect-to-religious elasticities fail to reject equality.¹⁰ This pattern of test results is consistent with Monte Carlo experiments from Wilhelm (2004) illustrating that conditional moment tests have power to detect departures from normality and homoskedasticity even when those departures cause very minor biases.

¹⁰ The sampling distributions for these and all the other test statistics in the table are bootstrapped. See Drukker (2002) on the need to bootstrap the normality test and Wilhelm (2004) for the Hausman and heteroskedasticity tests.

Additional estimates provide evidence about the size and direction of other potential biases. Elasticities estimated from the subsample of parents and children residing in different states do not drop toward zero providing some evidence that common unobservables are not driving the results: the Tobit latent estimates are .53 for the religious elasticity and .20 for the secular elasticity (CLAD results are qualitatively similar here and throughout the paragraph). This can also be taken as an indication that reverse causality (parents give more in response to their children's giving) is not driving the results; if reverse causality was driving the results we might expect children's giving to have a weaker influence on parents living farther away.

The religious elasticity is much larger when estimated on the subsample of children age 30 and younger (.81), but the secular elasticity barely changes (.129). This pattern is consistent with the measurement error and life-cycle arguments made earlier: current parent giving is a better signal of parent giving during the formative years for the younger cohort, and life-cycle bias is expected to be less of a problem for religious giving (and for secular giving the better signal of parent giving can be offset by worse life-cycle bias). Of course the pattern may be consistent with other arguments.

The results are not sensitive to including additional parent variables: current income, average recent past income over 1994-2000, average past income over 1968-1972, average wealth (excluding home equity), education, and religious affiliation.¹¹ We get a similar pattern of

¹¹ Parent current income enters the religious giving model with a negative sign and parent recent past income enters the secular giving model with a negative sign, as suggested by equation (4). We added controls for parents' 1968 church attendance to see if the significantly negative religious-with-respect-to-secular elasticity reflects omitted intensity of parental religiosity; the elasticity hardly changes. Adding the log tax price to the models produces price estimates of the correct sign, magnitudes similar to previous cross-section estimates, and negligible effects on the intergenerational elasticities. Because tax price effects are identified off of functional form, we

results if we regress the children's percentage of income given on the parents' percentage given. Finally, recall that the ballpark correction factor to adjust for attenuation bias suggests that the permanent elasticities are perhaps twice the magnitude of the elasticities we report.

To get a sense of the magnitudes of the intergenerational giving elasticities in Table 2 compare them to estimates of other intergenerational elasticities in Table 3. The Table 3 estimates are from OLS regressions that include all the demographic controls we have used in the giving models as well as the income and wealth controls when so indicated. Using these controls facilitates comparisons with our giving elasticities, but in some cases means that the Table 3 intergenerational elasticities are not directly comparable to previous published elasticities.

In column 1 the elasticity of children's log current income with respect to parents' log average past income is .14—much smaller than the .4-.5 range well-known from the mobility literature. A closer replication reproduces that literature's results with our sample: the elasticity rises to .32 when the set of demographic controls is reduced to age quadratics only and then to .42 when parental income is measured over 1968-1972 instead of the recent past. The increase by one-third of the mobility elasticity when using income from earlier in the parent's life-cycle reminds us about potential life-cycle bias toward zero in the giving elasticities. The .19 intergenerational wealth elasticity in column 2 is comparable to Charles and Hurst's (2003) estimate when they control for age and income. The final three elasticities are for food expenditure, consumption expenditure imputed as in Skinner (1987), and consumption

take this as some evidence that the intergenerational elasticities are not arising from functional form misspecification.

expenditure imputed using Lupton's (2002) expenditure regressions.¹² Because these dependent variables are expenditures we add children's income and wealth as independent variables; the specifications are therefore identical to the giving models. The estimates from these models range from .065 to .097.¹³ Comparing these estimates to the religious and secular elasticities of observable outcomes (ranging from .26 to .31 and .08 to .14 in Table 2, ignoring the row 3 results) we see that the religious elasticity is much larger than the income and expenditure elasticities, and somewhat larger than the wealth elasticity. The secular elasticity is in the same range as the expenditure elasticities but smaller than the income and wealth elasticities.

Two other ways to assess the size of the intergenerational giving elasticities are to compare them to the effect of own income and to predict giving differences between children based on differences in their parents' giving. The religious elasticity is about a third of the elasticity of religious giving with respect to children's average past income, and the secular

¹² Skinner imputes consumption expenditure from expenditures on food consumed at home, food eaten out, house value, and rent. Lupton's expenditure regressions use the two food expenditures, mortgage payments, rent, and utility payments. Both are based on the *Consumer Expenditure Survey*. Because Skinner's imputation includes house value, we re-estimated the intergenerational elasticity omitting the control for home equity; the estimate rises to .13.

¹³ This range is smaller than reported by Waldkirch, Ng and Cox (2004) whose results imply, for instance, an elasticity of .224 for food expenditure. Although some of the difference is likely due to differences in econometric methods (Waldkirch et al. use a factor model), a lot of it is due to attenuation bias. A ballpark calculation like that done for giving based on their results and their equation A2 suggests an attenuation factor of 2.5 for food expenditure. If we more closely replicate their sample (drop all divorced/separated parents when both remain in the survey) and independent variables (use only average income, sex, age, marital status, family size, and employment status) our estimate rises to .08. When increased by the attenuation factor ($0.08 \times 2.5 = .2$) it is much closer to Waldkirch et al.'s result. A similar ballpark argument delivers a similar result for consumption imputed as in Skinner (1987).

elasticity is about one-tenth of the income elasticity of secular giving.¹⁴ Turning to predictions, the giving elasticities suggest non-negligible differences in the giving of otherwise similar children whose parents give different amounts. Consider two children who are the same in every (observable) respect. Both their parents give to religion, but the parent of one is at the first quartile of the conditional distribution of religious giving among parents (\$450) and the other parent is at the median (\$1,000). The 0.26 intergenerational elasticity estimate (Table 2, row 1) suggests that the religious giving of the second child will be 32 percent higher than the first. A similar difference occurs if we compare children whose parents are at the median and third quartile (\$2,500). The secular giving effects are smaller: moving from the first quartile to the median in the conditional distribution of secular giving among parents (\$150 to \$400) is associated with about a 14 percent difference in the secular giving of their children.

Several other results are robust across the specifications in Table 2. Income is always significantly positive in all specifications. In the religious giving models there is evidence of a positive relationship with education, being married, living in the south, and (not surprisingly) expressing a religious affiliation. In the secular giving models those with higher wealth (specifically, the measure of wealth excluding home equity), higher education, and who are married give more. Surprisingly, expressing a religious affiliation is not associated with significantly higher secular giving in a robust manner across specifications.¹⁵

¹⁴ These comparisons are taken from specifications in which children's average past income is the only child resource variable used; this forces all of the effects of average past income, current income, and wealth to operate through one variable. There is little change in the estimates of intergenerational elasticities in these specifications.

¹⁵ The three major religious affiliations (Catholic, Protestant, Jewish) have significantly positive coefficients in the NLS secular giving specification. Jewish affiliation also has a

IV.B Parent Objectives

The different parental objectives discussed in Section I (when coupled with maintained assumptions about preferences and expectations) lead to testable hypotheses. To illustrate, suppose that the parent's motive is altruistic concern over her son's utility and couple this with assumptions that the child's marginal utility of generosity is increasing in own income (e.g., utility separable in consumption and giving delivers this), giving is a normal good, and the parent has perfect foresight concerning her son's future income $y_{2,t+1}$. Optimal parent choice then predicts that $dc_1^*/dy_2 > 0$; the intuition is that when y_2 increases, the child's marginal utility of generosity increases, and the parent raises her giving because it has become more productive in increasing son's utility (derivations of the comparative statics discussed in this section are available upon request in Appendix C). This suggests modifying equation (2):

$$c_{1,t} = \alpha_1 \gamma_1 + \delta_1 y_{1,t} + \theta y_{2,t+1} + u_{1,t} \quad (2')$$

where we expect $\theta > 0$. Substitute (2') into (1) and it becomes clear that a child's taste for generosity (γ_2) is positively correlated with his income $y_{2,t+1}$. Because γ_2 and $y_{2,t+1}$ are correlated estimating (3) without controlling for γ_2 will produce an upward bias in the estimated income effect. An indirect test of altruistic parent objectives is to see if the estimated income effect drops when controls for parent giving are added.

In contrast to altruistic concern over the child's utility, if the parent values her child's gift itself it is likely that $dc_1^*/dy_2 < 0$. The intuition is the standard crowd-out argument applied to

significantly positive coefficient in OLS, Tobit, and SCLS specifications, though not in CLAD.

the child's gift, a public good between the child and the parent. The implication is that the estimated income effect will increase when controls for parent giving are added.

When we add parent giving variables to the secular giving model the estimated income elasticity drops but the drop is small (the Tobit latent elasticities change from 1.636 to 1.538); the income elasticity change is negligible in the religious giving model.¹⁶ The small income elasticity drop could be taken as mild evidence of altruistic motives in the transmission of secular generosity.

However there are alternative plausible interpretations of the small-to-negligible income elasticity changes: they could be evidence of a third possible parental objective (e.g., to make her son's generosity taste parameter similar to her own, hence $\theta = 0$), they could result from the parent not taking her son's future income into consideration when deciding how much generosity to transmit (again $\theta = 0$), or they could arise because parent role modeling is a weak influence ($m \approx 0$ implying $\theta \approx 0$). Another possibility is that $c_{i,t+1}$ —the control being used for γ_2 —picks up little of the earlier role modeling and a large part of the bias in the child's income effect remains. If so, then another empirical approach would be to use panel data to see how the estimated income elasticity changes after fixed-effects are added; γ_2 would be subsumed in the fixed-effect.

V. Conclusions

We introduce new data on charitable giving and use it to estimate the elasticity of

¹⁶ Children's average past income is the only child resource variable used in these specifications (see footnote 14).

children's giving with respect to parents' giving. The estimates range from .26 to .31 for religious giving and from .08 to .14 for secular giving. The religious giving elasticity is roughly the same magnitude as intergenerational income and wealth elasticities, but perhaps somewhat larger. The magnitude of the secular giving elasticity is similar to that of intergenerational consumption expenditure. Our informal checks suggest that the estimates of giving elasticities may be biased toward zero by measurement error and life-cycle bias and that these are more serious problems than potential overestimation due to correlated contemporaneous shocks. However, we recognize that the data have limited ability to check for these sources of bias and this should be kept in mind when drawing implications from the estimates.

If taken at face value the estimates reflect both the strength of role modeling and the effects of genetic similarity and low-cost socialization techniques. To the extent that role modeling is at work the estimates suggest that tax incentives for charitable giving in one generation may also increase giving in future generations. The smaller transmission of secular generosity compared to the transmission of religious generosity suggests that any incentive effect may be weaker on future generosity toward purposes like human services, health care, and poverty relief than on religious generosity.

Secular generosity transmission is small relative to religious generosity transmission, but not relative to the intergenerational elasticity of private good consumption. One might have expected the secular elasticity to be smaller than the intergenerational consumption elasticity because a parent knows that her child can free-ride off the gifts others make to secular public goods. Of course, free-riding would only occur to the extent that the child's motivation to give is utility over public goods ("altruism"). Therefore, an intriguing possibility is that the result that

the secular elasticity is not smaller than the intergenerational consumption elasticity may suggest that child's utility over public goods is not what motivates his giving.

Finally, there is not much in our results that supports the commonplace notion that parents' religious giving has positive effects on children's generosity toward other charitable purposes. Parents' religious giving emerges as an engine for religious generosity, but it does not jumpstart giving for other purposes.

Table 1. Descriptive Statistics: Children's Giving By Whether Parents Give to Religious and Secular Purposes.

Variable	All children (1)	Parent religious giving		Parent secular giving	
		No (2)	Yes (3)	No (4)	Yes (5)
Giving to religious purposes					
Fraction giving	0.43	0.29	0.52	0.38	0.46
Amount, conditional on giving	1,783 (3,579) [600]	1,173 (1,792) [400]	1,970 (3,951) [710]	1,792 (3,736) [600]	1,779 (3,517) [600]
Giving to secular purposes					
Fraction giving	0.55	0.43	0.62	0.41	0.62
Amount, conditional on giving	795 (2,042) [300]	679 (1,461) [290]	840 (2,224) [336]	571 (952) [300]	867 (2,279) [325]
Number of observations	2,384	849	1,535	785	1,599

Notes: Standard deviations in parentheses. Medians in square brackets.

Table 2. Models of Children's Giving.

Specification	Dependent variables			
	Child's log religious giving		Child's log secular giving	
	Independent variables		Independent variables	
	Coefficient on log parent giving to:		Coefficient on log parent giving to:	
	Religious purposes	Secular purposes	Religious purposes	Secular purposes
1. Tobit – marginal effects: $\partial E(y \mathbf{x})/\partial x_j$ (evaluated at means)	0.259*** (0.039)	-0.068* (0.038)	-0.032 (0.035)	0.084** (0.035)
2. OLS (including zero gifts)	0.309*** (0.043)	-0.090** (0.040)	-0.043 (0.034)	0.097*** (0.033)
3. NLS – exponential model	0.501*** (0.039)	-0.178*** (0.034)	-0.123*** (0.029)	0.032 (0.027)
4. NLS – same as row 3, but omit outliers	0.300*** (0.033)	-0.082** (0.030)	-0.133*** (0.024)	0.142*** (0.026)
5. Tobit – raw coefficients: $\partial E(y^* \mathbf{x})/\partial x_j$	0.558*** (0.084)	-0.147* (0.082)	-0.050 (0.054)	0.130** (0.053)
6. SCLS	0.528*** (0.133)	-0.223* (0.124)	-0.079 (0.061)	0.119** (0.058)
7. CLAD – median	0.544*** (0.145)	-0.346*** (0.125)	-0.074 (0.067)	0.120** (0.061)
Specification test				
8. Conditional moment - normality (χ^2_2)	281***		219***	
9. Conditional moment - homoskedasticity (χ^2_{31})	127***		186***	
10. Hausman (Tobit–SCLS; χ^2_{31})	17		94**	
11. Hausman (Tobit–CLAD; χ^2_{31})	42		23	

Notes: The dependent variable in the first two columns is the amount given for religious purposes; in the second two columns the dependent variable is the amount given for secular purposes. Each row presents estimation results from the indicated specification for models of both dependent variables; only the coefficients on the log amounts given by parents are displayed.

Other controls included in the models but not displayed are: dummies for whether the parent gives to religious purposes and secular purposes; current income and average past income (both in logs); home equity and wealth excluding home equity (both in logs); dummies for wealth and home equity being zero or negative; the education and religious affiliation of the household head; the sex, age (quadratic), race, ethnicity, work status, health, and marital status of the household head; the number of children present in the household, a dummy for no children, whether the household is located in the South, and whether it is located in a large metropolitan area. $N = 2,384$.

In all rows except 3 and 4 the dependent variables are in logs. In rows 3 and 4 the dependent variables are in levels: $y = \exp(X'\beta) + u$ where $X'\beta$ are the same independent variables as in the other rows; these models are estimated using nonlinear least squares. In row 1 the Tobit marginal effects on $E(y)$ are not conditional on $y^* > 0$.

Standard errors are in parentheses (robust for the OLS model; bootstrapped for SCLS and CLAD).

* - Significant at 10 percent. ** - Significant at 5 percent. *** - Significant at 1 percent.

Table 3. Intergenerational Elasticities for Income, Wealth and Consumption.

	Income (average)	Wealth (excluding home equity)	Food	Imputed Consumption (Skinner)	Imputed Consumption (Lupton)
Elasticity	0.144 (0.020)	0.194 (0.036)	0.065 (0.016)	0.097 (0.014)	0.066 (0.018)
Income controls ^a	No	Yes	Yes	Yes	Yes
Wealth controls ^a	No	No	Yes	Yes	Yes
<i>N</i>	2,384	2,384	2,280	2,097	1,410

Notes: The coefficients are OLS elasticities from regressions of child variables (labeled in the columns) on the corresponding parent variable. The regressions include the demographic controls listed in Table 2, and the income and wealth controls as indicated in the present table. Robust standard errors are in parentheses. The number of observations in column 5 is much smaller because of missing data on utility payments that are necessary to impute consumption.

^a The same controls as listed in the notes to Table 2.

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Appendix A. Descriptive Statistics

Variable	Mean	Standard deviation
Log parent religious giving	5.126	2.454
Log parent secular giving	4.717	2.018
Parent gives to religion	.621	.485
Parent gives to secular	.667	.472
Log current income	10.875	.874
Log average past income ^a	10.780	.763
Log wealth (excluding home equity)	8.674	3.676
Wealth (excluding home equity) zero or in debt	.207	.405
Log home equity	7.339	4.245
Home equity zero or in debt	.403	.491
Education – Less than high school	.102	.302
– Some college	.281	.450
– College	.166	.372
– Post - college	.096	.295
Religious affiliation – Catholic	.225	.418
– Protestant	.492	.500
– Jewish	.028	.164
– Other	.120	.324
Female head of household	.166	.372
Age	36.8	9.7
Married	.635	.481
Number of children in the household	.956	1.127
No children in the household	.483	.500
Employed	.911	.285

Health is fair or poor	.070	.255
African-American	.065	.246
Hispanic	.024	.153
Ethnicity missing	.063	.244
Resides in south	.306	.461
Resides in a large city	.707	.455
<i>N</i>		2,384

Note: All demographic characteristics (e.g., age, race, education) are that of the head.

^a Income is averaged over five *PSID* waves 1995-1997, 1999, and 2001. Fewer waves are used if five are not available.

Appendix B. Main Results – Details.

For referees; not intended for publication.

This appendix contains the estimates from the OLS, NLS, Tobit, and CLAD models in Table 2 (the tables begin on the next page).

Table B.1 OLS Estimates.

Independent variables	Dependent Variables: Child's log religious giving	Child's log secular giving
Log parent religious giving	.308*** (.043)	-.043 (.033)
Log parent secular giving	-.090** (.040)	.097*** (.033)
Whether parent gives to religion	-.738*** (.204)	.314* (.167)
Whether parent gives to secular	.142*** (.164)	-.003 (.133)
Log average past income	.273*** (.082)	.646*** (.071)
Log current income – Log average past income	.218** (.087)	.304*** (.084)
Log wealth (excluding home equity)	.076** (.030)	.108*** (.025)
Wealth (excluding home equity) zero or in debt	.348 (.221)	.556*** (.187)
Log home equity	.102*** (.053)	.169*** (.042)
Home equity zero or in debt	.552 (.412)	1.072*** (.331)
Education – Less than high school	.033 (.126)	-.124 (.106)
– Some college	.286*** (.102)	.307*** (.086)
– College	.522*** (.132)	.547*** (.110)
– Post - college	.518*** (.177)	.859*** (.137)

Religious affiliation – Catholic	.497*** (.118)	-.085 (.114)
– Protestant	.789*** (.108)	.018 (.100)
– Jewish	.324 (.294)	.500*** (.183)
– Other	.147 (.143)	.123 (.123)
Female head of household	-.033 (.106)	.303*** (.105)
Age	-.089*** (.033)	-.030 (.027)
Age squared	.002*** (.0004)	.0006* (.0004)
Married	.622*** (.117)	.169* (.100)
Number of children in the household	.116* (.061)	.070 (.050)
No children in the household	-.142 (.143)	.094 (.115)
Employed	.180 (.132)	.006 (.109)
Health is fair or poor	-.148 (.151)	-.159 (.127)
African-American	.260 (.171)	-.015 (.134)
Hispanic	.178 (.271)	-.028 (.234)
Ethnicity missing	-.130 (.153)	-.112 (.122)
Resides in south	.370*** (.094)	.039 (.077)
Resides in a large city	.059 (.094)	.126* (.076)

constant	-1.827 (1.046)	-6.322 (.842)
R^2	.299	.372

Notes: Specification from Table 2, row 2. Robust standard errors are in parentheses.

* - Significant at 10 percent. ** - Significant at 5 percent. *** - Significant at 1 percent.

Table B.2 NLS Exponential Estimates: Without Outliers.

Independent variables	Dependent Variables:	Child's log religious giving	Child's log secular giving
Log parent religious giving		.300*** (.033)	-.133*** (.024)
Log parent secular giving		-.082*** (.038)	.142*** (.026)
Whether parent gives to religion		-.601*** (.104)	.623*** (.121)
Whether parent gives to secular		.059 (.132)	.074 (.144)
Log average past income		.622*** (.071)	.664*** (.058)
Log current income – Log average past income		.304*** (.083)	.792*** (.076)
Log wealth (excluding home equity)		.029 (.025)	.093*** (.025)
Wealth (excluding home equity) zero or in debt		.216 (.267)	.327 (.404)
Log home equity		.056 (.045)	.214*** (.039)
Home equity zero or in debt		-.146 (.394)	1.373*** (.397)
Education – Less than high school		-.186 (.391)	-.753 (.801)
– Some college		.372*** (.127)	.447*** (.145)
– College		.396*** (.133)	.593*** (.136)
– Post - college		.927*** (.133)	.235* (.142)
Religious affiliation – Catholic		2.399*** (.849)	.358** (.153)

– Protestant	3.042*** (.851)	.466*** (.159)
– Jewish	2.064** (.921)	.598*** (.162)
– Other	2.105** (.868)	.154 (.179)
Female head of household	1.061** (.472)	.503* (.260)
Age	.073 (.057)	.122** (.051)
Age squared	-.0008 (.0007)	-.001* (.0006)
Married	1.350*** (.469)	.314 (.214)
Number of children in the household	.055 (.046)	-.050 (.047)
No children in the household	-.428*** (.124)	-.251** (.112)
Employed	-.678*** (.095)	-.550*** (.087)
Health is fair or poor	1.128*** (.111)	-1.802*** (.651)
African-American	.815*** (.173)	.187 (.254)
Hispanic	.576* (.317)	-.136 (.385)
Ethnicity missing	-1.057*** (.411)	-.518* (.288)
Resides in south	.286*** (.078)	.624*** (.064)
Resides in a large city	-.647*** (.072)	.518*** (.154)
constant	-8.321 (1.705)	-9.583 (1.236)

R^2	.339	.440
N	2,380	2,379

Notes: Specification from Table 2, row 4. Standard errors are in parentheses.

* - Significant at 10 percent. ** - Significant at 5 percent. *** - Significant at 1 percent.

Table B.3 Tobit Estimates: Marginal Effects on the Latent Dependent Variable.

Independent variables	Dependent Variables: Child's log religious giving	Child's log secular giving
Log parent religious giving	.558*** (.084)	-.050 (.054)
Log parent secular giving	-.147* (.082)	.130** (.053)
Whether parent gives to religion	-1.032* (.438)	.462* (.279)
Whether parent gives to secular	.145 (.352)	.229 (.230)
Log average past income	.589*** (.199)	1.174*** (.131)
Log current income – Log average past income	.601** (.247)	.656*** (.162)
Log wealth (excluding home equity)	.151** (.068)	.144*** (.044)
Wealth (excluding home equity) zero or in debt	.637 (.562)	.593 (.357)
Log home equity	.069 (.108)	.108 (.071)
Home equity zero or in debt	-.083 (.881)	.408 (.577)
Education – Less than high school	-.584 (.386)	-.673*** (.246)
– Some college	.682*** (.286)	.534*** (.146)
– College	1.033*** (.269)	.779*** (.176)
– Post - college	.894*** (.326)	1.140*** (.212)
Religious affiliation – Catholic	2.017*** (.365)	.021 (.211)

– Protestant	2.549*** (.333)	.212 (.191)
– Jewish	1.627*** (.609)	.683* (.369)
– Other	1.108*** (.409)	.362 (.240)
Female head of household	–.250 (.343)	.562 (.203)
Age	–.027 (.081)	–.001 (.052)
Age squared	.001 (.001)	.0004 (.0007)
Married	1.607*** (.294)	.339* (.183)
Number of children in the household	.142 (.135)	.073 (.090)
No children in the household	–.271 (.311)	.187 (.205)
Employed	.650* (.359)	.271 (.227)
Health is fair or poor	–.546 (.400)	–.354 (.253)
African-American	.794** (.395)	–.208 (.226)
Hispanic	.620 (.581)	.047 (.386)
Ethnicity missing	–.300 (.399)	–.302 (.260)
Resides in south	.688*** (.200)	.042 (.131)
Resides in a large city	.067 (.210)	.190 (.137)
constant	–12.741 (2.483)	–14.411 (1.617)

Log-likelihood	-3524	-3773
Pseudo- R^2	.106	.117

Notes: Specification from Table 2, row 5. Standard errors are in parentheses.

Table B.4 CLAD Estimates.

Independent variables	Dependent Variables: Child's log religious giving	Child's log secular giving
Log parent religious giving	.544*** (.145)	-.074 (.067)
Log parent secular giving	-.346*** (.125)	.120** (.061)
Whether parent gives to religion	-.801 (.829)	.578* (.336)
Whether parent gives to secular	.486 (.488)	.201 (.297)
Log average past income	.877*** (.303)	1.015*** (.194)
Log current income – Log average past income	.466 (.344)	.853*** (.301)
Log wealth (excluding home equity)	.058 (.092)	.171*** (.061)
Wealth (excluding home equity) zero or in debt	-.646 (1.000)	.695 (.604)
Log home equity	.056 (.150)	.054 (.077)
Home equity zero or in debt	-.906 (1.360)	-.095 (.698)
Education – Less than high school	.326 (.773)	-.187 (.751)
– Some college	.674 (.412)	.397* (.223)
– College	1.233*** (.447)	.551*** (.197)
– Post - college	1.183** (.548)	.849*** (.209)
Religious affiliation – Catholic	2.006** (1.067)	-.019 (.280)

– Protestant	2.391** (1.020)	.267 (.258)
– Jewish	1.991 (1.239)	.396 (.334)
– Other	.524 (1.296)	.301 (.345)
Female head of household	.979 (1.543)	.638 (.406)
Age	-.035 (.159)	.071 (.092)
Age squared	.001 (.002)	-.0004 (.0011)
Married	1.318 (1.557)	.615*** (.183)
Number of children in the household	.299** (.125)	-.015 (.085)
No children in the household	-.361 (.411)	.097 (.228)
Employed	.642 (.557)	.031 (.304)
Health is fair or poor	-.592 (.760)	-.242 (.462)
African-American	1.011 (.645)	-.454 (.453)
Hispanic	1.238 (1.085)	-.155 (.663)
Ethnicity missing	.050 (.647)	-.411 (.449)
Resides in south	.698** (.296)	-.098 (.177)
Resides in a large city	-.004 (.320)	.316 (.209)
constant	-15.496 (4.545)	-15.251 (2.491)

Pseudo- R^2	.133	.185
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Notes: Specification from Table 2, row 7. Bootstrapped standard errors are in parentheses.

* - Significant at 10 percent. ** - Significant at 5 percent. *** - Significant at 1 percent.

Appendix C. Comparative Statics of Generosity Transmission.

For referees;
not intended
for publication.

C.1 Introduction

This appendix contains comparative statics results referred to in Section IV.B. Start with the transmission model (1) ignoring the random term:

$$\gamma_2 = m c_1 + \tau \gamma_1 \quad (\text{C.1})$$

The parent knows that once a child's generosity is determined it will affect his demand for giving:

$$c_2^* = f(\gamma_2, y_2, p_2) \quad (\text{C.2})$$

where c_2 is charitable giving, y_2 is son's income, and p_2 is the price of giving (less than one because of the tax treatment of giving). The demand for giving is derived from the son's utility function $W(c_2, s_2; \gamma_2)$ and budget constraint $p_2 c_2 + s_2 = y_2$ (s_2 is other consumption). Our assumptions are that the parent knows all of this: how γ_2 influences W and c_2^* and what y_2 and p_2 will be.

The son's level of generosity γ_2 can be thought of as a non-market good complementary to giving. The son cannot affect the level of γ_2 (from his perspective γ_2 is quantity-constrained), but the parent can affect γ_2 by role modeling and other socialization techniques.

C.2 The Parent's Motive is Altruism

The altruistic parent has utility function:

$$U(c_1, s_1; \gamma_1) + \beta W^*(\gamma_2, y_2, p_2) \quad (\text{C.3})$$

where U is the parent's direct utility (quasi-concave) over her own charitable giving and other

consumption, W^* is the son's indirect utility function conditional on γ_2 , and β is the weight she places on her son's utility. The altruistic parent will choose her charitable giving to maximize (C.3) subject to (C.1) and her budget constraint $p_1 c_1 + s_1 = y_1$. The first-order condition:

$$U_1(c_1, y_1 - p_1 c_1; \gamma_1) + \beta m W_1^*(\gamma_2, y_2, p_2) = p_1 U_2(c_1, y_1 - p_1 c_1; \gamma_1) \quad (C.4)$$

defines c_1^* . The second term is the additional benefit to the parent of giving to charity if by so doing the son's generosity is increased and if that in turn increases his happiness ($W_1^* > 0$). The comparative static result with respect to her son's income is:

$$[U_{11} - 2 p_1 U_{12} + p_1^2 U_{22} + \beta m^2 W_{11}^*] dc_1^* = - \beta m W_{12}^* dy_2. \quad (C.5)$$

Assuming parents have a declining marginal ability to increase their children's utility via generosity ($W_{11}^* < 0$) the term in square brackets is negative; a weaker condition that parent giving is normal both with and without altruism is all that is necessary. (If giving is normal without altruism ($\beta = 0$) then $-U_{12} + p_1 U_{22} < 0$. If $-U_{12} + p_1 U_{22} < 0$, normality with altruism requires that the term in the square brackets must be negative.) Consequently $dc_1^* / dy_2 > 0$ iff $W_{12}^* > 0$. A sufficient condition for $W_{12}^* > 0$ is $W(c_2, s_2; \gamma_2)$ separable.

$W_{12}^* > 0$ means that when y_2 increases, parent giving becomes more productive in increasing son's utility; the increased productivity leads to higher c_1 .

C.3 The Parent Values Her Child's Gift Directly

A parent who transmits generosity because she cares about the amount her son gives has utility function:

$$U(c_1, s_1; \gamma_1) + V(c_2^*) \quad (C.6)$$

where we assume that $V' > 0$ and $V'' < 0$. The first-order condition:

$$U_1(c_1, y_1 - p_1 c_1; \gamma_1) + m V'(f(\gamma_2, y_2, p_2)) f_1(\gamma_2, y_2, p_2) = p_1 U_2(c_1, y_1 - p_1 c_1; \gamma_1) \quad (C.7)$$

defines c_1^* . The parent gets an additional benefit from giving to charity as long as the son's giving is increasing in his generosity ($f_1 > 0$). The comparative static result with respect to her son's income is:

$$[U_{11} - 2 p_1 U_{12} + p_1^2 U_{22} + m^2 (V' f_{11} + m V'' f_1^2)] dc_1^* = - m [V' f_{12} + V'' f_1 f_2] dy_2. \quad (C.8)$$

Sufficient conditions for the term in square brackets on the left-hand side to be negative are $V'' < 0$ and $f_{11} < 0$ (diminishing marginal propensity to give with respect to generosity); paralleling the situation with altruistic parents, all that is necessary for the square bracket term to be negative is that parental giving is normal both with and without the $V(c_2^*)$ portion of her utility. Under these conditions the sign of $dc_1^* / dy_2 < 0$ iff $f_{12} < -(V'' / V') f_1 f_2$. The right-hand side of the inequality is positive under our assumptions on the first two derivatives of V , that son's giving is increasing in generosity, and normality ($f_2 > 0$).

Higher son's income has two effects on his parent's giving. First, higher son's income implies higher son's giving, reducing the marginal benefit to the parent from increasing son's giving; this is the standard crowd-out effect. Second, higher son's income may increase the parent's generosity-transmitting productivity in increasing son's giving ($f_{12} > 0$). If the productivity increase is not too large, the crowd-out effect will dominate: parent giving will fall if she expects her son's income to be high.

There is no crowd-out effect in the altruism model because child utility enters parent utility linearly, as is standard. The predictions of the altruism model can obviously change if linearity is relaxed.