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Abstract

Since giving to religious organizations constitutes a substantial portion of total charitable giving, an understanding of the determinants of religious giving is a vital policy concern. Drawing on a novel congregation-level panel dataset, we examine whether religious giving is driven by preferences for racial group affinity, that is, loyalty to one's own racial group. To address endogeneity concerns, we combine a fixed effects estimation framework with an instrumental variable approach. We find robust evidence consistent with the racial group affinity motive: a decrease in the percent of whites in the county is ceteris paribus associated with a decrease in the total giving receipts collected by predominantly white congregations.

JEL-Code: D640, L310, Z120, J150.

Keywords: religious giving, racial group affinity, diversity, congregations.

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1. Introduction

In the United States, giving to religious organizations constitutes more than 50 percent of total charitable giving (Schervish et al. 2002: 34). Religious organizations, in turn, use a portion of these funds to provide a wide range of social services. Referring to Solomon (2003), Hungerman (2008: 380) reports that "[o]f the more than 350,000 congregations in the country, more than 85% support some type of social service activity". Thus, an understanding of the determinants of religious giving is a vital concern for policy makers.

In this paper, we test the hypothesis that religious giving is shaped by preferences for *racial group affinity*, that is, loyalty to one's own racial group. Drawing on a unique and thus far unexplored congregation-level dataset, we examine whether, and to what extent, the total receipts from giving collected by the predominantly white congregations of a particular Christian denomination in one U.S. state are affected by the share of whites in the congregation's community.

Given that globalization and lower barriers to mobility have led to steadily increasing racial diversity across communities, ascertaining how religious giving responds to racial composition of the local community is relevant for prediction of future trends in charitable giving. At the same time, it is important to investigate whether in-group bias, a salient behavioral phenomenon identified in a variety of experimental settings studied by the literature on social psychology (see, e.g., Festinger 1964, Tajfel 1970, Tajfel et al. 1971, Brewer 1979, Mullen et al. 1992, Brown et al. 2000) and behavioral economics (see, e.g., Ruffle and Sosis 2006, Ahmed 2007, Ben-Ner et al. 2009, Güth et al. 2009, Pan and Houser 2011, Ockenfels and Werner 2013, Chakravarty and Fonseca 2014), can also be detected in observational data in the context of religious giving.

The role of the local community's racial structure for religious giving or church charitable activity has thus far been explored in only a handful of papers.[1] Drawing on data from Presbyterian congregations, Coate and Vanderhoff (2009) and Vanderhoff (2012) document that increased racial diversity in the local community is associated with more religious giving, a finding not in line with the racial group affinity hypothesis. In contrast, using three different congregation-level datasets, Hungerman (2008) shows that all-white congregations spend less on local charitable activities as the share of black residents in the community increases, a result lending support to the racial group affinity hypothesis. Thus, further empirical investigation of the phenomenon is warranted.

Aside from utilizing a newly assembled dataset, the key novelty of our approach vis-à-vis the existing studies on the role of the local community's racial structure for religious giving and church charitable activity (Hungerman 2008, Coate and Vanderhoff 2009, Vanderhoff 2012) stems from thoroughly exploiting the panel structure of our congregation-level data. As we clarify in the context of a simple theoretical framework that we develop to guide our empirical analysis, there exist compelling arguments in favor of controlling for congregation-level unobserved heterogeneity when estimating the effect of racial composition in the community on congregation-level religious giving. Specifically, the concern is that the effect of racial composition of the community on congregation-level religious giving is blurred by unobserved congregation-specific characteristics that correlate with the community's racial composition. Yet, the likely confounding role of congregation-level unobserved heterogeneity has, for various

[1] For a general overview of the interdisciplinary literature on religious giving, see Lincoln et al. (2008).

reasons, thus far not been fully addressed in the scant empirical literature on the topic (Hungerman 2008, Coate and Vanderhoff 2009, Vanderhoff 2012).[2]

We tackle the problem of unobserved congregation-level heterogeneity by utilizing congregation-level fixed effects analysis. Ample within-congregation variation in total giving receipts over time enables us to directly control for the confounding role of congregation-specific, time-invariant unobserved factors. The additional inclusion of congregation-specific time trends allows us to control for unobservable common trends in religious giving and racial composition of the local community. One such plausible scenario is "white flight" (Hungerman 2008) when an increase in racial diversity in the community leads to a reduction in religious giving by white congregations, not for reasons of racial group affinity, but rather because the most affluent white congregation members relocate out of the original community.

Our empirical analysis shows that controlling for congregation-level unobserved heterogeneity is indeed critical. Naïve pooled ordinary least squares (OLS) estimates suggest that religious giving is not motivated by racial group affinity; in fact, based on OLS estimates, religious giving to predominantly white congregations is ceteris paribus statistically significantly *negatively* associated with the share of whites in the local community. Once addressing the likely confounding impact of congregation-level unobserved heterogeneity through the inclusion of congregation fixed effects and congregation-specific time trend, however, we find a statistically significant positive association between total congregation-level receipts and the share of whites in the county, evidence consistent with racial group affinity motives.

[2] One of the three datasets used by Hungerman (2008) is a panel. However, by the virtue of very slow changes in congregations' racial makeup over time, Hungerman is unable to estimate his coefficients of interest sufficiently precisely if he controls for congregation-level fixed effects (ibid.: fn. 9). In contrast, both Coate and Vanderhoff (2009) and Vanderhoff (2012) use congregation-level panel data, but choose not to control for congregation-level fixed effects; instead, both studies control for synod fixed effects.

The implied effect of racial group affinity is non-trivial in magnitude. Based on our preferred estimates, if the percent of whites in the county decreases by one percentage point, the total receipts collected by a congregation decrease on average by between two to five percent, all else equal. The positive effect of the percent of whites in the county on congregation-level religious giving is robust to inclusion of a variety of congregation- and county-level controls, as well as to combining congregation-level fixed effects estimation with an instrumental variable approach aimed at even better isolating the effect of exogenous variation in the share of whites in the community. A further set of tests allows us to rule out with a high level of confidence that our results cannot be attributed to white flight.

In addition to contributing to the literature that examines the sensitivity of religious giving and charitable church activity to the local community's characteristics (Hungerman 2008, Coate and Vanderhoff 2009, Vanderhoff 2012) and the voluminous literature on in-group bias noted above, our paper also relates to the broader literature on the relationship between diversity and attitudes toward activities that provide public benefits. Some research shows that racially or ethnically diverse communities spend less on publicly funded goods and services such as schools, roads, and social programs (see, e.g., Alesina et al. 1999, 2000, 2001; Poterba 1997, Goldin and Katz 1999; Vigdor 2004) and have worse quality of government (La Porta et al. 1999, Alesina et al. 2003, Easterly et al. 2006). Other research does not find a significant, or unambiguous, effect of heterogeneity on public good provision or the functioning of the public sector (see, e.g., Cutler et al. 1993, Hopkins 2011, Gerdes 2011). Existing work has also shown that racial or ethnic heterogeneity is associated with lower levels of trust (see, e.g., Alesina and La Ferrara 2002), less civil society involvement and fundraising (see, e.g., Alesina and La Ferrara 2000, Miguel and Gugerty 2005, Okten and Osili 2004), and fewer contributions to

charities in general (Andreoni et al. 2011).[3] Empirical evidence further indicates that individuals exhibit loyalty to their own racial group in the context of attitudes toward welfare spending (Luttmer 2001, Senik et al. 2009, Eger 2010, Dahlberg et al. 2012). Our analysis sheds further light on these debates by demonstrating that in predominantly white congregations of a major Christian denomination in one U.S. state, the collected total giving receipts decrease as the share of whites in the local community decreases.

The rest of the paper proceeds as follows. In the following section, we develop a simple conceptual framework to guide our empirical analysis. Section 3 introduces our data and variables. Section 4 develops our empirical strategy and presents the results. Section 5 concludes.

2. Racial-Group Affinity and Religious Giving: A Simple Model

To guide our empirical analysis, we develop a stylized model of religious giving. We do not strive to develop a general theory of religious giving. Instead, our goal is to propose a plausible micro-founded framework in which, much like in the reduced-form frameworks of within-group affinity developed by Vigdor (2002) and Andreoni et al. (2011), donor preferences for giving exhibit racial group affinity. The model allows us, first, to identify the role of some salient individual-level factors shaping religious giving. Second, the aggregation of individual donors' demands for giving at the level of a congregation—the level of aggregation at which we observe giving in our data—illustrates various sources of observed and unobserved congregation-level heterogeneity that are important to account for in empirical analysis.

Let the utility of donor *i* who is a member of congregation *k* located in community *c* take on the following Cobb-Douglas form:

[3] For further references and an overview of the literature on ethnic and racial diversity and economic outcomes, see Alesina and La Ferrara (2005) and Stichnoth (2013).

$$u_{ikc}(x_{ikc}, g_{ikc}) = \chi_{ikc} \ln x_{ikc} + (1 - \chi_{ikc}) \ln(\omega_c + \theta_{kc} g_{ikc}), \quad (1)$$

where x_{ick} is donor i's private consumption and g_{ikc} is donor i's charitable gift.[4] ω_c is the wealth endowment of i's own racial group (as the donor's target recipient group) in community c. $\theta_{kc} \in [0,1]$ is the share of donor i's gift that congregation k distributes to i's racial group in community c. Assuming that congregations distribute gifts evenly across all racial groups in the community of their respective residence, $\theta_{kc}=\theta_c$ for all k in a given community c. θ_c then represents the population share of donor i's racial group in the community. Finally, the parameter $\chi_{ikc} \in (0,1)$ captures the strength of donor i's preference for private consumption relative to giving.

Much like in the framework of Vigdor (2002) and Andreoni et al. (2011), utility function (1) implies that there is no public good aspect to the donor's gift. Hence, there are no free-riding effects (within the congregation or beyond) in this model.[5] Moreover, since donor's utility does not depend on the consumption of everybody else per se, donors are not purely altruistic. Instead, the donor experiences a "warm glow" (Andreoni 1989, 1990, 2006) from giving *conditional* on the congregation allocating at least a portion of the donor's gift to the individuals in the donor's community who belong to the donor's own racial group.[6] In particular, $\partial^2 u_{ikc}/(\partial\theta_c \partial g_{ikc})>0$: the larger the share of the gift that the congregation allocates to the donor's own racial group, the higher the donor's marginal utility from giving. Giving is therefore motivated by racial group affinity.

The donor chooses x_{ikc} and g_{ikc} to maximize (1) subject to the budget constraint $x_{ikc}+g_{ikc}=m_{ikc}$, where m_{ikc} is donor i's income. Assuming an interior solution, at the optimal

[4] Neither the Cobb-Douglas functional form nor the assumption of linear homogeneity of (1) is essential for our arguments. We rely on these assumptions to simplify the exposition and derive tractable closed-form solutions.
[5] For analyses of free-riding in the context of religious giving, see e.g. Zaleski and Zech (1992, 1996) and Lipford (1995).
[6] Ribar and Wilhelm (2002) provide evidence suggesting that, at the margin, donations to charitable organizations are motivated *solely* by warm-glow ("joy-of-giving") preferences.

choice, the marginal benefit of giving derived from increasing the consumption of other group members in the donor's racial group equals the marginal cost of giving in terms of foregone private consumption:

$$\frac{(1-\chi_{ikc})\theta_c}{\omega_c+\sigma_{kc}g_{ikc}}=\frac{\chi_{ikc}}{m_{ikc}-g_{ikc}}. \tag{2}$$

Solving (2) for g_{ikc}, donor i's optimal choice of giving equals:

$$g_{ikc}=(1-\chi_{ikc})m_{ikc}-\frac{\chi_{ikc}\omega_c}{\theta_c}. \tag{3}$$

Let K_c denote the set of donors that are members of congregation k in community c. Then, the aggregate giving for congregation k in county c is:

$$g_{kc}\equiv\sum_{i\in K_c}g_{ikc}=\sum_{i\in K_c}(1-\chi_{ikc})m_{ikc}-\frac{\omega_c}{\theta_c}\sum_{i\in K_c}\chi_{ikc}. \tag{4}$$

To further simplify expression (4) and illuminate the determinants of congregation-level giving, we let both the strength of donors' motivation for giving relative to private consumption and the donors' income be homogeneous within a congregation: $\chi_{ikc}=\chi_{kc}$ and $m_{ikc}=m_{kc}$ for all donors $i\in K_c$ belonging to congregation k in county c. This captures the notion that congregations plausibly attract relatively like-minded and similarly affluent individuals, a process facilitated by competition in the religious marketplace (Iannaccone 1998), individuals' tendencies for social conformity (see, e.g., Argyle and Beit-Hallahmi 1975: 117), and a high level of racial homogeneity within congregations in our sample. Then,

$$g_{kc}=n_{kc}\left((1-\chi_{kc})m_{kc}-\frac{\chi_{kc}\omega_c}{\theta_c}\right), \tag{5}$$

where n_{kc} denotes the number of members of congregation k in community c.

Expressions (4) and (5) suggest that congregation-level religious giving varies with both congregation-specific and community-level factors. In particular, congregation-level religious giving (see expression (5)) increases with: the total membership of the congregation; the affluence of the congregation's members; the strength of the congregation members' preference for giving relative to private consumption; and the share of the donors' racial group in the community. In contrast, congregation-level religious giving decreases with the wealth endowment of the donors' racial group in the community.

3. Data and Variables

To empirically test whether religious giving is motivated by racial group affinity, we draw on a restricted-access, congregation-level dataset that contains information on congregations that all belong to the same Christian denomination and are all located in one U.S. state. The denomination of the congregations covered by our dataset is one of the largest Christian denominations in the United States. Our sample consists of congregations (churches and a few missions) for which the members' dominant ethnicity is 'White, non-Hispanic' (white, in short).[7] White congregations represent an overwhelming majority of all congregations of this specific denomination in the particular state of our analysis.[8]

As our measure of the congregation's community, we use the county (see, e.g. Hungerman 2008).[9] We thus combine our congregation-level data with county-level Census demographic and socio-economic data as well as county-level data on the number of churches

[7] In contrast to congregation-level datasets explored by Hungerman (2008), Vanderhoff (2012), and Coate and Vanderhoff (2009), detailed data on congregations' ethnic/racial composition is, unfortunately, not available in our data. However, it is well-known that the white congregations in our data are racially highly homogeneous.

[8] The presence of racial-group affinity effects in religious giving could in principle also be tested using non-white congregations. However, the number of non-white congregations in our dataset is very small and, hence, does not lend itself to econometric analysis.

[9] Due to a combination of the lack of compatibility of census tract definitions across the four decades of our interest (1980-2010) and the imprecise information on geo-locations of our congregations, the use of the census tract as an alternative measure of congregation's community is not feasible.

and their adherents across different denominations collected by the Religious Congregations and Membership Study (RCMS). Because our main explanatory variable of interest, the share of whites in a county in a given year, is measured by the Census on a decennial basis, we pool together data from the four cross-sections—years 1980, 1990, 2000 and 2010—for which we possess data from all three of the above-described data sources. We drop observations with unclear or evidently erroneous records and observations that involve missing values for a number of variables. Our final dataset consists of 4,745 congregation-year observations. As we clarify in Section 4.4 below, appropriate tests suggest that the unbalanced nature of our panel does not give rise to sample selection issues.

Table 1 defines and describes the variables used in our analysis. Table 2 shows the summary statistics. To measure religious giving, we use the total value of receipts collected by a congregation in a given county in a given year.[10] Given our focus on white congregations, our key explanatory variable is the percent of the population self-reported as white, non-Hispanic, in a given year in the county where the congregation is located.

Our primary congregation-level control is resident membership. Resident membership controls for the effect of congregation size. It is also a good proxy for religious attendance, which captures aspects of religiosity that might affect giving. For example, high church attendance signals religious commitment, which may in turn affect religious giving (Lincoln et al. 2008: 7). Furthermore, higher attendance exposes people to more charitable solicitation, which might in itself drive giving (ibid.: 8). In robustness checks (see Section 4.4), we include several other congregation-level controls that measure religiosity and attendance.

[10] Congregations in our sample do not change counties during the time period of our analysis.

Two further congregation-level variables that should influence church giving based on our theoretical framework (see Section 2)—the affluence of church membership and the members' innate preference for giving—are unobservable to us. To address a likely omitted variable bias due to this unobserved congregation-level heterogeneity, our preferred estimated models (discussed in detail in the following section) include congregation fixed effects as well as congregation-specific time trend (see Section 4.2).

Our primary proxy for wealth endowment of the gift recipient population is median income in the county. In performing robustness checks, we also control for county-level percent of total families under the poverty line, educational attainment, and population density. Following the literature emphasizing the importance of religious competition on church activity and giving (see, e.g., Zaleski and Zech 1995, Coate and Vanderhoff 2009), we further include a measure of county-level religious diversity.

Finally, we note that an important part of empirically observed variation in charitable giving may be explained by differences in marginal tax rates across jurisdictions (see, e.g., Andreoni 2006, 2007; Vanderhoff 2012). Our focus on congregations of a major Christian denomination located in one U.S. state directly addresses this issue since individual income tax rates, which affect the price of charitable giving, are determined at the state level and, hence, do not vary across counties within a state. Moreover, the state of our focus does not allow for the collection of municipal and county level income taxes that would otherwise add to the complexity of the tax structure.

4. Empirical Strategy and Results

Based on the theoretical framework developed in Section 2, we specify the following general empirical model to be estimated using a panel of predominantly white congregations in one U.S. state:

$$TotalReceipts_{kct} = f(\%White_{ct}, X_{kct}, Z_{ct}) + u_{kct}. \quad (6)$$

In (6), subscript k identifies congregation, c county, and t year. The outcome variable $TotalReceipts_{kct}$ is logged total receipts from charitable giving in congregation k located in county c in year t. Our focal explanatory variable $\%White_{ct}$ is the percent of residents self-identified as white in county c in year t. X_{kct} is a vector of congregation-level controls. Z_{ct} is a vector of county level controls. u_{kct} is the error term.

Using variants of model (6), we explore several empirical approaches to estimate the effect of racial group affinity on religious giving. For all of the regression models we estimate, we base inference on heteroscedasticity-robust standard errors clustered at the county level. Clustering of errors at the county level allows us to correct for plausible correlation of the error terms over time for all congregations within a given county (but we rule out correlation between error terms across counties).

4.1. Benchmark: Naïve Pooled OLS

As a benchmark, we examine the association between the percent of whites in the county and religious giving by estimating the following model:

$$TotalReceipts_{kct} = \alpha + \beta \times \%White_{ct} + X_{kct}'\gamma + Z_{ct}'\delta + \lambda_t + u_{kct}, \quad (7)$$

where the variables $TotalReceipts_{kct}$, $\%White_{ct}$, and the vectors X_{kct} and Z_{ct} are defined above. α is the regression constant. λ_t is a year fixed effect included to control for any business cycle

effects and to facilitate the interpretation of the effects of our explanatory variables on congregation-level total receipts as real (as opposed to nominal).

We estimate model (7) using pooled OLS. The results are reported in columns (1) and (2) of Table 3. The association between the percent of whites in the county and congregation's total receipts is negative but statistically insignificant when we control only for congregation's resident membership and year fixed effects (column (1)), and negative and statistically significant when we additionally control for the median family income in the county (column (2)). Based on the estimates in column (2), a one percentage point decrease in the percent of whites in the county is, in contrast with the predictions of our theoretical framework, ceteris paribus associated with on a 6.4 percent *increase* in congregation's total receipts.

To interpret the pooled OLS estimate of β from expression (7) in column (2) of Table 3 as the causal effect of the percent of white in the county on total congregation receipts, our congregation-level and county-level controls must adequately control for all possible factors that are correlated with the percent of whites in the county and, at the same time, total church receipts. That is, to establish causality, the error term u_{kct} in (7) must be uncorrelated with the variable $\%White_{ct}$. This is a strong and likely untenable assumption, in particular since data availability precludes us from adequately controlling for congregation-level differences in the strength of congregation members' preference for giving relative to private consumption and the affluence of congregation members (see Section 3). As a result, the pooled OLS estimates of β discussed above are likely biased. To better address endogeneity concerns, we turn to estimation of fixed effects specifications.

4.2. Fixed Effects Specifications

We explore two fixed effects specifications:

$$TotalReceipts_{kct} = \beta \times \%White_{ct} + X_{kct}'\gamma + Z_{ct}'\delta + \lambda_t + \mu_{kc} + \nu_{kct} \quad (8a)$$

$$TotalReceipts_{kct} = \beta \times \%White_{ct} + X_{kct}'\gamma + Z_{ct}'\delta + \lambda_t + \mu_{kc} + \mu_{kc}t + \varepsilon_{kct}. \quad (8b)$$

The crucial difference between (7) and (8a) is that the latter, unlike the former, decomposes the error term into a time-invariant component μ_{kc} and a time-varying component ν_{kct}. μ_{kc} is the congregation fixed effect and captures all congregation-level, time invariant unobserved factors which may affect religious giving. An example may be the overall strength of the congregation members' preference for giving relative to private consumption. Because congregations do not change their respective residing counties during the period of our analysis, congregation fixed effects also absorb all county-level time-invariant factors that may impact religious giving.

In contrast to specification (8a), specification (8b) further decomposes the error term by including the congregation-specific linear time trend $\mu_{kc}t$ that captures any unobserved congregation- and county-specific trends that may affect religious giving. For instance, under the white flight scenario (Hungerman 2008), an increase over time in racial diversity in the county induces out-of-county relocation of the most affluent white congregation members, which in turn leads to an overall decrease in religious giving. In this case, we would observe a positive correlation between congregation-level total receipts and the percent of whites in the county regardless of whether congregation members exhibit racial-group affinity in religious giving. In the absence of adequate proxies for wealth of congregation members, the inclusion of the congregation-specific linear time trend $\mu_{kc}t$ in (8b) captures, at least in part, such congregation- and county-specific changes. Under a tenable assumption that any changes over time in the composition of the congregation's membership do not alter the congregation-level average

preference for religious giving relative to private consumption, the inclusion of congregation-specific linear time trend thus mitigates the concern that any association between the county-level percent of whites and total receipts in the predominantly white congregations should be attributed to white flight rather than racial group affinity. In the robustness checks (see Section 4.4), we also report results that further assure us that our results are not driven by the white flight phenomenon.

We estimate the fixed effects models (8a) and (8b) using the fixed effect 'within' estimation whereby one first time-demeans the data (to eliminate the congregation fixed effect) and then estimates the resulting time-demeaned model with OLS.[11] Columns (3) and (4) in Table 3 present the results. Both specifications in column (3) and column (4) control for the congregation's resident membership and median income in the county. Unlike the specification in column (3), the specification in column (4) also controls for the congregation-specific linear time trend. In contrast with the pooled OLS estimates in columns (1) and (2), and consistent with our theoretical predictions, the fixed effect estimates suggest there is a statistically significant (at one percent significance level) *positive* association between the percent of whites in the county and congregation's total receipts. As anticipated, controlling for congregation-level unobserved heterogeneity is therefore important. Based on the estimates in column (4), a one percentage point decrease in the percent of whites in the county is associated with a 2.2 percent decrease in congregation's total receipts. While the coefficient on resident membership remains positive and statistically significant, the coefficient on median family income in the county loses statistical significance once we estimate a fixed effects model.

[11] This approach is equivalent to least squares dummy variable (LSDV) estimation where models (8a) and (8b) are estimated using OLS directly upon the inclusion of a full set of congregation-specific dummies (see, e.g., Wooldridge 2002).

4.3. Instrumental Variable Approach

In a further attempt to address endogeneity concerns in assessing the effect of the percent of whites in a county on religious giving, we combine fixed effects estimation with an instrumental variable approach. We follow Alesina et al. (1999) and Hungerman (2008) and propose the decennial lag of the percent of whites in a county as an instrument for the current percent of whites in the county. Given that racial composition of a geographic area typically does not change abruptly, we expect that the ten-year lagged value of the share of whites is highly correlated with the current share of whites in the county. At the same time, the share of whites in a county ten years ago is unlikely to directly influence religious giving today, especially once controlling for a range of time-varying congregation-level and county-level factors, as well as congregation fixed effects. That is, we argue that the ten-year lag of percent of whites in the county plausibly satisfies the exclusion restriction and provides for an adequate source of exogenous variation in the current share of whites in a county.

We estimate model (8b) using the fixed effects two stage least squares (FE-IV/2SLS) estimator where the variable $\%White_{ct}$ is instrumented for with its ten-year lag. The second-stage results are presented in column (5) of Table 3. The estimated effect of the percent of whites in the county on congregation's total receipts is statistically significant (at one percent significance level) and a little more than twice the size of the fixed effects estimates in columns (3) and (4). Thus, addressing endogeneity concerns through the application of an instrumental variable approach is quantitatively important. Simple fixed effects estimates are downward biased. Based on the estimates in column (5), a one percentage point decrease in the percent of white in the county decreases the congregation's total receipts by about five percent.

The corresponding first-stage regression results are shown in the first column of Table A1 in the Appendix. As conjectured, we find the ten-year lagged percent of whites in the county to be a statistically very significant predictor of the current percent of whites in the county. Ceteris paribus, the current percent of whites in the county is positively associated with the percent of whites in the county ten years ago.

4.4. Robustness Checks

We first examine the robustness of our fixed effect results (see columns (3) and (4) in Table 3) to inclusion of congregation-level variables that plausibly affects religious giving and in addition may correlate with the percent of whites in the county. One such variable is religiosity. We use two different controls for religiosity: average worship attendance and average Sunday school attendance. The results in columns (1) and (2) of Table 4, which feature a full set of congregation fixed effects and congregation-specific time trend, show that while total receipts are indeed positively associated with either measure of religiosity, the coefficient on percent whites in the county remains positive, statistically significant, and in terms of magnitude very similar to the estimates in columns (3) and (4) of Table 3.

While continuing to control for the extent of congregation-level religiosity, we next introduce additional county-level controls to further isolate the effect of percent whites in the county from the potentially confounding effect of other county-level variables. In column (3) of Table 4, we add a measure of the percent of families in the county that are below the poverty line. In column (4), we further add a measure of educational attainment in the county and also control for population density. None of these additional county-level variables are statistically significant. At the same time, the coefficient on percent whites in the county remains positive, statistically significant, and virtually unchanged in terms of magnitude.

We next add a Herfindahl-Hirschman index of county-level religious diversity to control for effects of religious competition on church giving. By construction, higher values of the index imply lower religious diversity (see Table 1). Greater religious diversity may induce stronger competition for members and lead to intensified fund-raising at the level of congregations (see, e.g., Finke and Stark 1988, Zaleski and Zech 1995, Coate and Vanderhoff 2009) as well as possibly influence an area's racial composition. Albeit statistically insignificant, the coefficient on the religious diversity index in column (5) of Table 4 is negative, suggesting that total receipts ceteris paribus indeed increase with greater religious diversity. The coefficient on percent whites in the county remains positive, statistically significant, and virtually unchanged in size.

We apply the fixed effects instrumental variable approach, laid out in Section 4.3, to the specification with the maximum number of congregation-level and county-level controls featured in column (5) of Table 4. Column (6) of Table 4 presents the second-stage regression results. The estimate of the coefficient on the percent of whites in the county is positive, statistically very significant, and very similar in magnitude to the corresponding estimate reported in column (5) of Table 3. The associated first-stage results (second column of Table A1 in the Appendix) again show the ten-year lagged percent of whites in the county as a statistically very significant predictor of the current percent of whites in the county.

One might still be concerned that our results are driven by white flight rather than racial group affinity. Given lack of time-varying proxies for the wealth of congregation members, the inclusion of congregation-specific time trends may not control fully satisfactorily for simultaneous changes in the racial composition of the county and white-flight-induced wealth composition of the congregation membership, which in turn affects giving. Moreover, the lagged percent of whites in the county could reflect past occurrences of white flight. If the consequences

of historic episodes of white flight persist over time (Hungerman 2008: 388), our instrumental variable does not satisfy the exclusion restriction, rendering our instrumental variable approach invalid.

If white flight is salient in our data, we should detect a statistically significant positive association between the percent of whites in the county and either the income level of the most affluent county residents or the share of county residents belonging to the highest income bracket. The results in Table 5 suggest that is not the case. The percent of whites in the county is in our sample in fact negatively and statistically insignificantly associated with the share of county residents falling in the highest income bracket (column (1)). Similarly, the coefficient on the percent of whites in the county is statistically insignificant (albeit positive) in the regressions where the dependent variable is an estimate of household income at either the 80^{th}, 85^{th}, or 90^{th} percentile (columns (2)-(4)). These additional estimates lead us to dismiss with a high level of confidence the concern that our results may be driven by white flight.

Finally, given the unbalanced nature of our panel, a concern might be that our results suffer from selection bias that would arise if congregations are entering and exiting the religious market based on their ability to collect religious contributions. To test for the presence of selection bias, we ran the Nijman and Verbeek (1992) test advocated by Wooldridge (2002: 581).[12] We constructed a selection dummy equal to one if congregation *k* is part of the panel in year *t* and zero otherwise, included either a ten-year lagged or a ten-year lead value of the selection indicator in our regressions, and conducted a t-test of the null hypothesis that the coefficient on the lagged or lead selection indicator respectively equals zero. Under the null hypothesis, selection in the future or past decade should not be significant in the estimated total receipts model that holds for time *t*. In none of the preferred specifications was the coefficient on

[12] Results are available upon request.

the lagged or lead selection indicator found to be statistically significantly different from zero. Therefore, our unbalanced panel does not suffer from selection bias.

5. Conclusion

Beyond being "a virtue in and of itself" (Andreoni et al. 2011: 2), diversity confers many socio-economic benefits (see, e.g., Alesina and Ferrara 2005, Page 2007). Recent empirical research, however, has also illuminated a less advantageous side of diverse communities: greater heterogeneity within communities is associated with reduced contributions toward goods and activities that confer public benefits. We contribute to this research by examining whether, and if so to what extent, a quantitatively very important component of total charitable giving in the U.S.—religious giving—is in part driven by racial group affinity motives; that is, the positive dependence of religious contributions on the share of one's own racial group in the local community.

The panel structure of our novel congregation-level panel dataset allows us to confront the problem presented by unobserved congregation-level heterogeneity to a fuller extent than the existing studies on the sensitivity of religious giving and church charitable activity to local community's racial composition. Our analysis implies that an increase in racial diversity in the community may result in a non-trivial reduction in religious giving. Given the substantial involvement of congregations in the provision of various social services, these findings have implications for private provision of public goods.

Finally, we emphasize that our analysis is purely positive, and not normative, in character. In addition, we focus on congregations of a single religious denomination in one U.S. state. While this approach offers clear benefits in terms of our ability to empirically assess the

presence of the racial group affinity motive, further research should seek to test the racial group affinity hypothesis in a broader context.

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Table 1: Variable Definitions

Variable Name	Variable Description	Source
Congregation-level		
Receipts Total	Logged total amount of money donated to the congregation in a given year, in USD.	Hand-collected
Resident Membership	Total active membership of the congregation in a given year.	Hand-collected
Worship Attendance	Average number of people who attend Sunday morning worship service.	Hand-collected
Sunday School Attendance	Average number of members 25 years or older that attend Sunday school.	Hand-collected
County-level		
% White	Percent of white county residents.	Decennial Census 1980-2010
Median Income	Median family income in the county.	Decennial Census 1980-2010
% Families in Poverty	Percent of families below the poverty line in the county.	Decennial Census 1980-2010
% College Degree	Percent of county residents who have completed some college or more.	Decennial Census 1980-2010
Population Density	Total county population divided by county area in square miles.	Decennial Census 1980-2010
Religious Diversity Index	Sum across denominations of the squared shares of churches of a given denomination.	RCMS

Notes: The hand-collected congregation-level variables are for one Christian denomination in one U.S. state. RCMS stands for Religious Congregations and Membership Study.

Table 2: Summary Statistics

Variable Name	No. Obs.	Mean	Std. Dev.	Min.	Max.
Congregation-level					
Receipts Total	4,745	11.18	1.30	4.32	16.48
Resident Membership	4,745	295.5	434.0	2	5,569
Worship Attendance	4,745	62.7	164.0	0	3,200
Sunday School Attendance	4,745	107.5	205.4	0	3,156
County-level					
% White	4,745	69.2	11.6	28.1	95.7
Median Income	4,745	25,311.2	11,010.2	7,780.0	60,874.0
% Families in Poverty	4,745	18.1	5.6	7.2	51.2
% College Degree	4,745	11.3	4.1	2.7	20.2
Population Density	4,745	163.9	352.0	5.2	3,087.0
Religious Diversity Index	4,745	0.229	0.113	0.034	0.662

Notes: The table reports summary statistics for the sample used to generate the results presented in Tables 3 and 4.

Table 3: Core Results

	Pooled OLS		FE		FE-IV/2SLS
Explanatory Variables	(1)	(2)	(3)	(4)	(5)
% White (in county)	–0.0017	–0.0065***	0.0212***	0.0219***	0.0506***
	(0.0022)	(0.0022)	(0.0065)	(0.0065)	(0.0099)
Congregation-level					
Resident Membership	0.0020***	0.0020***	0.0010***	0.0010***	0.0009***
	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
County-level					
Median Income (in USD 1,000)		0.0252***	0.0046	0.0052	–0.0037
		(0.0072)	(0.0042)	(0.0041)	(0.0056)
Year FE	Yes	Yes	Yes	Yes	Yes
Congregation FE	No	No	Yes	Yes	Yes
Congregation Time Trend	No	No	No	Yes	Yes
R-squared	0.5567	0.5652	0.4766	0.4770	-
No. Obs.	4,745	4,745	4,745	4,745	3,370

Notes: The dependent variable is Receipts Total (measured at the level of a congregation). Models (1) and (2) are estimated using pooled OLS. Models (3) and (4) are estimated using the 'within' fixed effects estimator. Model (5) is estimated using fixed effects instrumental variable/two stage least squares approach. The R-squared reported for models (3) and (4) is the 'within' R-squared and is not directly comparable with the R-squared reported for models (1) and (2). Heteroscedasticity-robust standard errors clustered at the county level in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Robustness Checks

	FE					FE-IV/2SLS
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
% White (in county)	0.0244***	0.0224***	0.0242***	0.0231***	0.0227***	0.0541***
	(0.0076)	(0.0065)	(0.0079)	(0.0072)	(0.0074)	(0.0106)
Congregation-level						
Resident Membership	0.0009***	0.0008***	0.0009***	0.0009***	0.0009***	0.0008***
	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Worship Attendance	0.0003*		0.0003*	0.0003*	0.0003*	0.0003***
	(0.0002)		(0.0002)	(0.0002)	(0.0002)	(0.0001)
Sunday School Attendance		0.0008***				
		(0.0002)				
County-level						
Median Income (in USD 1,000)	0.0038	0.0028	0.0036	0.0007	0.0006	–0.0064
	(0.0041)	(0.0039)	(0.0042)	(0.0048)	(0.0049)	(0.0059)
% Families in Poverty			–0.0008	–0.0008	–0.0006	0.0022
			(0.0055)	(0.0053)	(0.0054)	(0.0064)
% College Degree				0.0184	0.0180	0.0061
				(0.0146)	(0.0146)	(0.0128)
Population Density				0.0000	0.0000	0.0002
				(0.0001)	(0.0001)	(0.0003)
Religious Diversity Index					–0.3065	0.1675
					(0.3559)	(0.4164)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Congregation FE	Yes	Yes	Yes	Yes	Yes	Yes
Congregation Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
R-squared (within)	0.4791	0.4838	0.4791	0.4797	0.4799	-
No. Obs.	4,745	4,745	4,745	4,745	4,745	3,370

Notes: The dependent variable is Receipts Total (measured at the level of a congregation). Models (1)-(5) are estimated using the 'within' fixed effects estimator. Model (6) is estimated using fixed effects instrumental variable/two stage least squares approach. Heteroscedasticity-robust standard errors clustered at the county level in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Test of the Presence of White Flight

Explanatory Variables	(1)	(2)	(3)	(4)
% White (in county)	–0.0287	119.84	73.33	47.42
	(0.1266)	(175.77)	(196.37)	(260.39)
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R-squared	0.9133	0.9702	0.9706	0.9705
No. Obs.	256	256	256	256

Notes: The estimates are based on a panel of counties pooled over four decades (1980, 1990, 2000, 2010) for the U.S. state in which the congregations that are the subject of our analysis are located. The dependent variable in model (1) is the share of households with income no smaller than USD 75,000 as the largest income bracket that is consistently reported by the U.S. Census for the four decades in question. The dependent variable in models (2), (3), and (4) is respectively the estimated level of household income at the 80^{th}, 85^{th}, and 90^{th} percentile. The income percentile levels in each of the four decades were estimated using linear approximation on the basis of the actual distribution of households across the income brackets reported by the U.S. Census. (The alternative estimates based on more complex kernel density estimation were very similar. Details on the method of estimation of household income percentiles are available upon request.) Heteroscedasticity-robust standard errors clustered at the county level in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A1: First-Stage Results for FE-IV/2SLS Results Reported in Tables 3 and 4

Explanatory Variable	Table 3, Column (5)	Table 4, Column (6)
10-Year-Lagged % White (in county)	0.6569***	0.6718***
	(0.0204)	(0.0204)
Congregation-level		
Resident Membership	0.0001	0.0004*
	(0.0002)	(0.0002)
Worship Attendance		–0.0005**
		(0.0003)
County-level		
Median Income (in USD 1,000)	0.0019	0.0461***
	(0.0175)	(0.0166)
% Families in Poverty		–0.0080
		(0.0183)
% College Degree		0.0559
		(0.0359)
Population Density		–0.0146***
		(0.0008)
Religious Diversity Index		–10.3867***
		(1.1175)
Year FE	Yes	Yes
Congregation FE	Yes	Yes
Congregation Time Trend	Yes	Yes
R-squared (within)	0.7234	0.7723
No. Obs.	3,370	3,370

Notes: The dependent variable is % White (measured at the county level). Heteroscedasticity-robust standard errors clustered at the county level in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.