

Grant Williams

Ec 970: Taxation and Inequality

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Abstract

This paper estimates the elasticity of charitable giving with respect to the marginal tax rate among top earners and explores how this elasticity is moderated by religious observance. I seek to evaluate whether more religious counties, specifically those with large Latter-day Saint (LDS) and Evangelical populations that are more likely to tithe, exhibit different elasticities of charitable donations in response to changes in the marginal tax rate. By harmonizing a panel dataset of tax and religion data of all US counties between 2010 to 2016 from the [IRS](#) and the [Association of Religious Data Archives](#), I observe that, while there is limited statistical significance, charitable deductions tend to be treasury efficient and both heavily Evangelical and LDS counties tend to be less responsive to changes in the marginal tax rate than less heavily religious counties.

Introduction

Despite first being instituted in the United States as a means to raise revenues during the Civil War as early as 1862, the federal income tax did not evolve to allow charitable deductions until the passage of the Revenue Act of 1917 (Brooks 2007). Since first appearing in the tax code at the onset of the 20th century, the charitable deduction has grown in size, expanding from a maximum permissible deduction for cash gifts to charity of 15% of Adjusted Gross Income (AGI) in 1917, to 50% of AGI in 1969, and to 60% of AGI from 2017 onward (Duquette 2019). Seldom maximized, the charitable deduction reduces the price of donating to religious organizations, charities, and other non-profits for individuals and joint filers, essentially subsidizing the provision of social services by non-governmental groups.

Mechanically, charitable deductions allow taxpayers to voluntarily allocate funds to non-profit organizations, and, in so doing, reduce their overall tax burden. For example, absent any charitable deduction, a person interested in donating \$10,000 to charity faces an ‘effective price of donating’ of \$10,000. No fraction of her charitable contribution is counted against her tax liability, so she pays the full nominal amount of \$10,000 in charity in addition to the taxes that she owes. However, factoring in the charitable deduction and a hypothetical marginal tax rate of 45%, her effective price of donating \$10,000 craters to \$5,500. This occurs because the amount of money she donates to charity is first deducted from her earnings and then taxed at the marginal rate of 45%. In this way, the government subsidizes marginal donations at the ‘net of tax rate’ of $1 - t_m$, where t_m is the marginal tax rate.

The subtractive nature of this net of tax rate suggests that higher marginal tax rates translate to greater levels of charitable giving. Numerous papers have sought to estimate this behavioral response by calculating the elasticity of charitable giving with respect to the marginal tax rate. Most of these studies, however, consider data obtained in the 20th century when norms on charitable giving may have been different from those in the 21st. More significantly, none consider the moderating effect of religious adherence on the elasticity of charitable giving specifically. This paper thus attempts to fill in these gaps in the current literature.

There exists a wide variety in charitable giving amounts across the United States, with southern states and mountain states donating higher amounts of money to charity as a percentage of Adjusted Gross Income than other regions of the country (Gittell and Tebaldi 2006). These high-donating areas of the country, perhaps uncoincidentally, exhibit high rates of religious adherence among Evangelical and Latter-day Saint populations, religions known for following

the Biblical practice of donating a tenth of one's income to church (James and Jones 2011).

Given these practices, this paper seeks to determine whether counties with substantial numbers of Latter-day Saint, Evangelical, and otherwise religious people are less responsive to changes in the marginal tax rate than counties with less substantial religious populations. Adherents of religions with tithing tenets are more likely to fulfill their religious duties regardless of the tax incentives, and I thus expect their elasticities to be lower.

To test this, I interact a county's net of tax rate with its religious adherence rate and observe whether there is a differential elasticity of charitable giving to changes in the marginal tax rate for more religious and less religious counties (including county and time fixed effects). Absent an interaction term, regressing charitable giving on the net of tax rate, I expect an increase in the net of tax rate (a decrease in marginal taxes) to correspond to a decrease in charitable giving, yielding a negative slope coefficient on the net of tax term. After adding an interaction term between the net of tax rate and the religious adherence rate to the regression, I expect to see a positive coefficient on this interaction term, suggesting a moderating effect of religious activity on charitable giving elasticity.

Since Latter-day Saint populations tithe more than Evangelicals ("Religious Beliefs and Practices"), who tithe more than religious people at large ("Evangelical Beliefs and Practices"), I expect that the interaction term in the regression that measures religiosity by a county's Latter-day Saint adherence rate has the most positive coefficient. I likewise anticipate that the coefficient on the interaction term in the regression that uses the Evangelical adherence rate is the next largest, followed by the interaction term in the regression that employs the general religious adherence rate.

After running the regressions, I find the coefficient on the interaction term between a county's log net of tax rate and its Latter-day Saint adherence rate to be 0.644, and the interaction term between a county's log net of tax rate and its Evangelical adherence rate to be 0.518. While neither coefficient is statistically significant, they, with less than 95% confidence, suggest that counties with more adherents of those religions tend to exhibit lower charitable giving elasticities to marginal tax rate changes. For example, the 0.644 coefficients, were it statistically significant, would suggest that a county with exclusively LDS adherents would have an elasticity of charitable giving that is 0.644 percentage points lower in magnitude than a similar county with no LDS adherents. While the other coefficients are likewise not statistically significant, the charitable donation elasticity estimates all cluster around value just lower than -1, potentially evidencing treasury efficiency. This would mean, in other words, that a 1% increase in the marginal tax rate corresponds to an increase in charitable giving that is greater than 1% on average. All in all, this paper presents convincing evidence that charitable giving elasticities vary among different religious groups and that policies aimed at increasing charitable giving cannot assume uniform sensitivity.

Review of Relevant Literature

Despite the significant role that charitable deductions in the tax code play in promoting nonprofit activity, little to no research has been conducted to evaluate the different behavioral responses of people of varying religious identities. Much of the literature relies upon the assumption that people, across faith traditions, exhibit uniform charitable giving elasticities to changes in the marginal tax rate — a premise this paper seeks to challenge.

Seminal in the literature on the elasticity of charitable donations to marginal tax rates are parts I and II of Martin Feldstein's 1975 paper, "The Income Tax and Charitable Contributions." By leveraging a pooled time series of charitable donations by income bin between 1948 and 1968, Feldstein estimates that the elasticity of charitable donations for each bin tends toward -1.1, generally remaining above 1 in magnitude and, thus, remaining treasury efficient (Feldstein 1975). In other words, Feldstein's paper is the first to assert that a 1% decrease in the marginal tax rate corresponds to a more than 1% increase in charitable giving. These estimates serve as the benchmarks of much of the modern tax literature regarding elasticities, his paper correcting flaws in the methodology of the only other previous studies on the subject (Taussig 1967; Schwartz 1970). Taussig's research design relies on a snapshot of a single year's itemized returns, and, consequently, he drastically underestimates elasticities (Taussig 1967). While Schwartz draws upon more data than Taussig, he constructs three distinct time series that are rife with imprecise estimates, and, consequently, similarly observes reduced elasticities (Schwartz 1970). To avoid these same errors, this paper employs a pooled time series approach that uses both panel data and cross-sectional visualizations to observe trends in charitable giving across counties in a manner similar to Feldstein's design. It improves, however, upon Feldstein's research as it incorporates entity and time fixed effects that technology did not yet permit in 1975. Likewise, while this paper mirrors Feldstein's calculation of the elasticity of charitable donations to the marginal tax rate by regressing the log net of tax rate on the log average donation amount per return, it improves upon the 1975 methodology by evaluating county estimates separately rather than aggregating across entities.

Apart from better approximating elasticities, Feldstein's 1975 papers also introduce to the tax literature the non-uniform sensitivity of charitable giving across categories of recipients, Part II of "The Income Tax and Charitable Contributions" asserting that "religious organizations are much less sensitive than [educational institutions and hospitals], calculating that, absent the charitable deduction, "religious gifts would fall by only some 14 percent while gifts to educational institutions and hospitals would be cut approximately in half" (Ibid). While Feldstein's paper differentiates and categorizes philanthropic giving channels by their recipients, it does not consider the religious identities of the donors themselves, a dimension of charity this paper seeks to explore.

Later research confirms his same elasticity and religious observations. In a 1976 paper written by Amy Taylor and Feldstein, the authors perform three different methods to estimate elasticities of charitable donations — the first two by observing cross sections of the 1962 and 1970 Treasury Tax Files and the third by exploiting the change in tax rate by income between these years — and consistently estimate an elasticity between -1 and -1.5. They likewise confirm his earlier religious observations, projecting that eliminating the 1970 charitable deductions would reduce donations to religious organizations by 22% and educational institutions and hospitals by 48% and 46% respectively (Feldstein and Taylor 1976).

Feldstein's research holds up well over time, a 2005 meta-analysis by John Peloza and Piers Steel concluding that, despite variation across papers, "tax deductions are treasury efficient" (Peloza and Steel 2005). Given the recent decline in elasticity estimates since 2005, this paper aims to determine whether general elasticity patterns remain consistent in the modern political landscape, this paper drawing upon additional 21st-century tax returns unavailable to previous economists.

Beyond empirically observed elasticities, it may be helpful to consider donations to religious organizations, specifically tithing, within the framework of “informal taxation” to understand why these forms of charitable giving may not respond to marginal tax rate shocks the same way other forms might. Benjamin Olken and Monica Singhal in their 2011 article, “Informal Taxation,” define informal taxes as “a system of local public goods finance coordinated by public officials but enforced socially rather than through the formal legal system” (Olken and Singhal 2011). In states like Utah, where the density of Latter-day Saints is particularly large and the institutional power of the Church of Jesus Christ of Latter-day Saints is high, it is arguable that tithing payments are enforced socially by church leaders with influence in the community, like bishops and stake presidents, who can then suspend members’ good-standing in the religion. Viewing charitable donations like tithing as something more akin to a tax than a voluntary contribution, even if the tithing is donated willingly and enthusiastically, could explain the reduced elasticity of charitable donations in counties with more Latter-day Saint residents.

Data Description

This paper utilizes county-level data from the Internal Revenue Service's Statistics of Income (IRS SOI) to evaluate the possible relationship between marginal tax rates, charitable donations, and religious observance. The selected years for these data are 2010 to 2016, a period of sustained economic growth in the United States that saw little change in tax law related to the charitable deduction, state and local tax deductions, or the standard deduction. The 2017 Tax Cuts and Job Act made substantial changes to state and local tax deductions and the standard deduction that could confound regressions by making itemization less common, and previous to 2009 was the Great Recession, which could have heavily affected charitable giving pattern across and within states, so only data from 2009 to 2016 are considered (Haveman and O'Reilly 2021).

These data contain the number of returns, the total AGI, and the total amount of charitable giving in US dollars for all counties in the United States across distinct income bins. County values for bins with fewer than twenty returns are redacted by the IRS out of identifiability concerns, however, as are table values where more than an unspecified percentage of a county's value is attributable to one return. For this reason, rows with NA values for the aggregate charitable giving, the number of returns, or the collective AGI are dropped when performing the regressions.

A separate data source, the Association of Religious Data Archives, provides county-level estimates on the adherence rates of people within a county for each of over 300 religious institutions. This is measured as how many, out of 1000 people in a county, are estimated to be church-going adherents of each religious organization, and is recorded once every 10 years. Before including this data, I divide the adherence rate by 1000 so that it is a more interpretable fraction. As the data from 2020 is not yet publicly available, I use the 2010 data.

And, lastly, information on the top marginal tax rate for each state across years is also collected from the [National Bureau of Economic Research](#) (NBER). This dataset accounts for the cross-deduction of state and federal taxes, offering an overall marginal tax rate that is the sum of the marginal state and federal tax rate minus any state adjustments for each state in a given year.

Methodology

I harmonize religion, IRS, and marginal tax rate data into a panel data frame containing the charitable giving in thousands of dollars, the number of returns, the net of tax rate, and the religious adherence rates for each county in the United States for every year from 2010 to 2016. After doing this, I use the following regression with both county and time fixed effects to

estimate the elasticity of charitable giving to the marginal tax rate and the moderating effect of religious activity, weighting my regressions by the number of returns in each state.

Regression 1: Charitable Giving per Return and the Net of Tax Rate

$$\log(\text{charitable giving per return}) = \beta_0 + \beta_1 \log(1 - \text{tax}) + \beta_2 \log(1 - \text{tax}) * \text{RateReligious} + \delta_t + \alpha_c + v_{ct}$$

The county (α_c) and time (δ_t) fixed effects in the regression control for omitted variables that either vary over time and not counties, or vary over counties and not time. For example, fluctuations in the national unemployment rate and differences in the general demographic makeup within counties are controlled for. The error term, v_{ct} , represents the error term, which, ideally, measures only statistical noise and randomness in the model. These regressions rely upon the identification assumption of strict exogeneity, that the error term has an expectation of zero and is not correlated with any of the explanatory variables. Given that there exist omitted variables that vary over time and within counties like regional migration that are infamously difficult to account for, this identification assumption is not entirely met, but the fixed effects render it mostly satisfied. I also use clustered standard errors at the state level since this is the smallest unit at which policy changes occur.

In the most basic iteration of the aforementioned regression that I use, I drop the interaction term between the log net of tax rate and the religious adherence rate. The coefficient, β_1 , in this simplified regression, thus measures the elasticity of charitable giving with respect to changes in the marginal tax rate, assuming uniformity in charitable donation elasticity across religious groups. Because I regress the log of charitable giving per return by the log of the net of tax rate, β_1 is approximately equivalent to the percent change in average charitable giving per return associated with a 1% increase in the net of tax rate.

Since I am interested in determining whether more religious counties are less responsive to changes in the marginal tax rate, in additional regressions, I include an interaction term between the log net of tax rate and the religious adherence rate. I measure religious adherence in three different ways: the percent of a county that is an adherent of any religious church, the percent of a county that is an adherent of an evangelical church, and the percent of a county that is an adherent of a Latter-day Saint church. The coefficient of interest in these regressions is β_2 . This coefficient can be interpreted as roughly how much β_1 , the elasticity of charitable donations, differs between a county that has a 0% adherence rate and a county with a 100% adherence rate of the given religion. The regression is replicated separately for each of these measures, resulting in four total regressions.

To check for robustness, I also perform the same regressions at the state level as opposed to the county level. I also substitute the outcome variable with the log percentage of AGI donated to charity to verify that similar trends persist. In this second regression, the coefficient interpretations are identical except that β_1 measures the elasticity of the percent of AGI donated to charity with respect to changes in the marginal tax rate. This is approximately equivalent to the percent change in the percent of AGI donated to charity associated with a 1% increase in the net of tax rate.

Regression 2: Percent of AGI donated to Charity and the Net of Tax Rate

$$\log(\text{Percent of AGI donated to Charity}) = \beta_0 + \beta_1 \log(1 - \text{tax}) + \beta_2 \log(1 - \text{tax}) * \text{RateReligious} + \delta_t + \alpha_c + v_c$$

Results

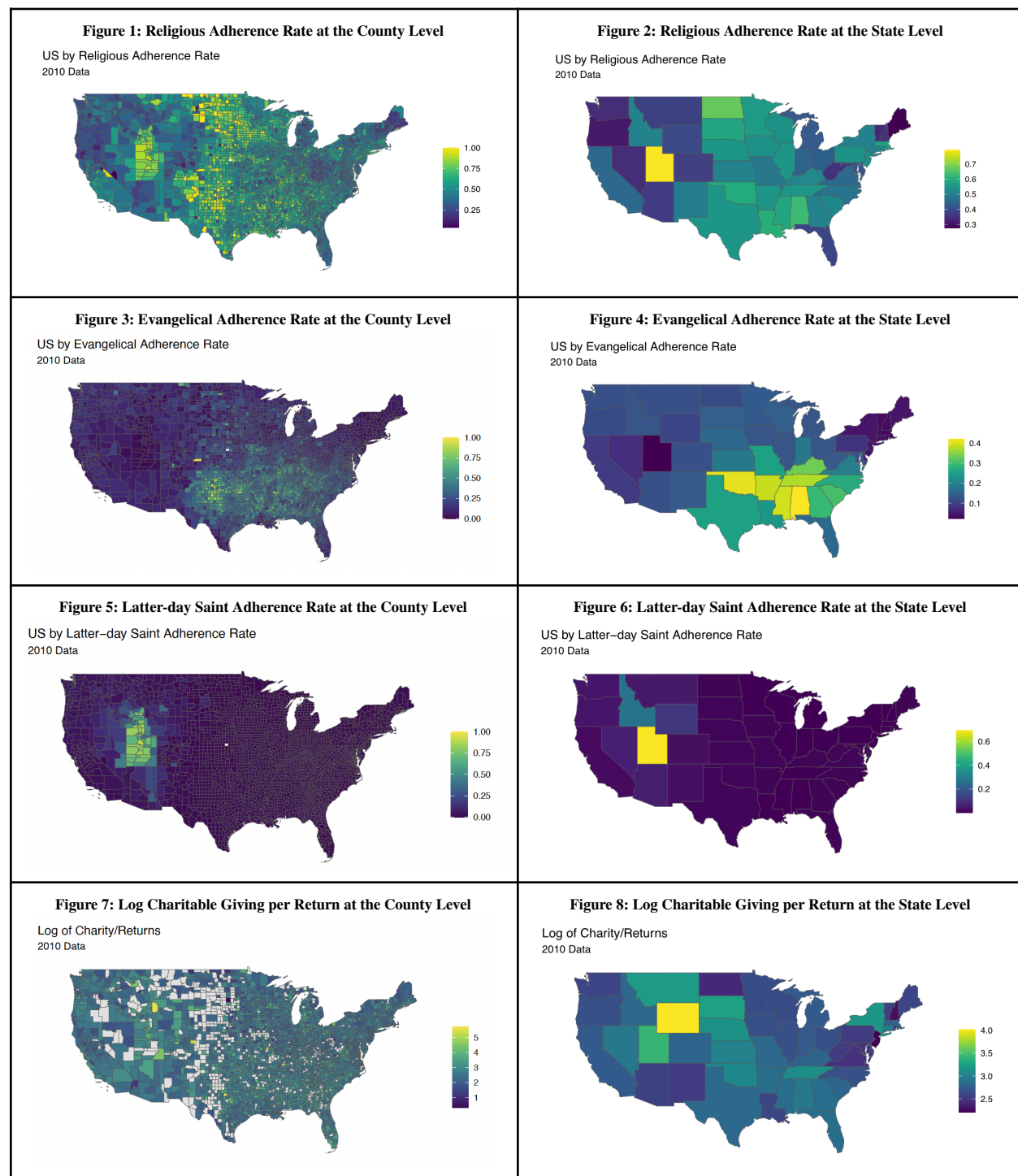


Figure 9: Charitable Giving as a Percentage of AGI at the County Level

Charity as Percentage of AGI
2010 Data

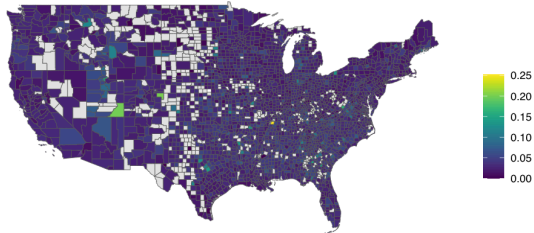


Figure 10: Charitable Giving as a Percentage of AGI at the State Level

Charity as Percentage of AGI
2010 Data

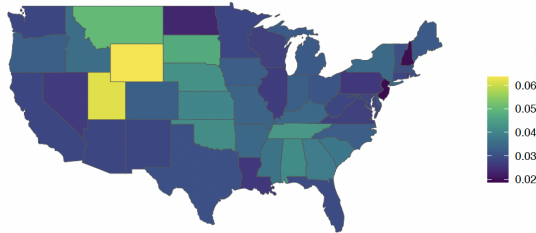


Figure 11: Net of Tax Rate at the County Level

Net of Tax Rate
2010 Data

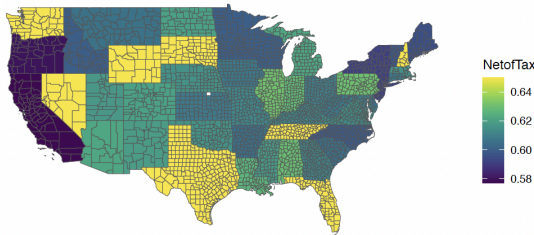


Figure 12: Net of Tax Rate at the State Level

Net of Tax Rate
2010 Data

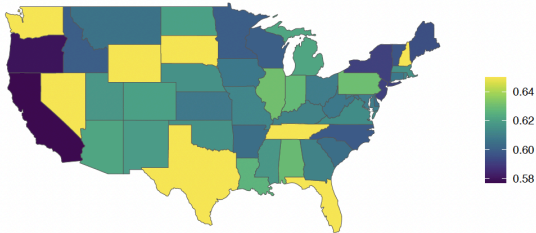
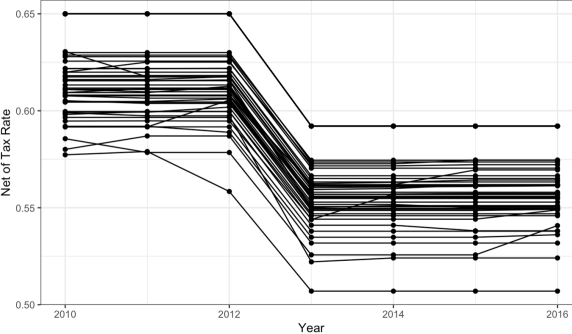


Figure 13: Net of Tax Rate over Time at the State Level

States by Net of Tax Rate across Years



**Table 1: Relationship between Religious Adherence and Charitable Giving per Return at the County Level
(Regression 1 at the County Level)**

	<i>Dependent variable:</i>			
	log(Charity/Returns)			
	(1)	(2)	(3)	(4)
log(NetofTax)	-0.882 (0.804)	-1.076 (0.723)	-1.066 (0.751)	-1.052 (0.747)
TOTRATE				
log(NetofTax):TOTRATE	-0.422 (0.688)			
EVANRATE				
log(NetofTax):EVANRATE		0.518 (1.410)		
LDSRATE				
log(NetofTax):LDSRATE			0.644 (0.526)	
County Fixed Effects?	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes
Observations	19,358	19,358	19,358	19,358
R ²	0.926	0.926	0.926	0.926
Adjusted R ²	0.913	0.913	0.913	0.913
Residual Std. Error	6.178 (df = 16452)	6.178 (df = 16452)	6.179 (df = 16452)	6.179 (df = 16453)

Note: *p<0.1; **p<0.05; ***p<0.01

**Table 2: Relationship between Religious Adherence and Charitable Giving per Return at the State Level
(Regression 1 at the State Level)**

	<i>Dependent variable:</i>			
	log(Charity/Returns)			
	(1)	(2)	(3)	(4)
log(NetofTax)	-1.761 (1.571)	-1.869* (1.121)	-1.839 (1.149)	-1.828 (1.150)
TOTRATE				
log(NetofTax):TOTRATE	-0.153 (1.674)			
EVANRATE				
log(NetofTax):EVANRATE		0.755 (2.101)		
LDSRATE				
log(NetofTax):LDSRATE			0.463 (0.445)	
State Fixed Effects?	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes
Observations	357	357	357	357
R ²	0.928	0.928	0.928	0.928
Adjusted R ²	0.914	0.914	0.914	0.914
Residual Std. Error	24.674 (df = 298)	24.649 (df = 298)	24.671 (df = 298)	24.633 (df = 299)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Relationship between Religious Adherence and Charitable Giving as a Percent of AGI at the County Level (Regression 2 at the County Level)

	<i>Dependent variable:</i>			
	log(Charity/GrossAGI)			
	(1)	(2)	(3)	(4)
log(NetofTax)	-0.472 (0.434)	-0.754* (0.432)	-0.785* (0.409)	-0.772* (0.405)
TOTRATE				
log(NetofTax):TOTRATE	-0.748 (0.553)			
EVANRATE				
log(NetofTax):EVANRATE		-0.386 (1.106)		
LDSRATE				
log(NetofTax):LDSRATE			0.557 (0.396)	
County Fixed Effects?	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes
Observations	19,358	19,358	19,358	19,358
R ²	0.866	0.866	0.866	0.866
Adjusted R ²	0.842	0.842	0.842	0.842
Residual Std. Error	5.631 (df = 16452)	5.634 (df = 16452)	5.634 (df = 16452)	5.634 (df = 16453)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Relationship between Religious Adherence and Charitable Giving as a Percent of AGI at the State Level (Regression 2 at the State Level)

	<i>Dependent variable:</i>			
	log(Charity/GrossAGI)			
	(1)	(2)	(3)	(4)
log(NetofTax)	-1.116 (1.179)	-1.501* (0.814)	-1.513* (0.805)	-1.500* (0.806)
TOTRATE				
log(NetofTax):TOTRATE	-0.877 (1.339)			
EVANRATE				
log(NetofTax):EVANRATE		0.017 (1.751)		
LDSRATE				
log(NetofTax):LDSRATE			0.511 (0.390)	
State Fixed Effects?	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes
Observations	357	357	357	357
R ²	0.900	0.900	0.900	0.900
Adjusted R ²	0.880	0.880	0.880	0.881
Residual Std. Error	21.512 (df = 298)	21.539 (df = 298)	21.534 (df = 298)	21.503 (df = 299)

Note: *p<0.1; **p<0.05; ***p<0.01

Discussion

The choropleth graphs reveal patterns in the spatial distribution of the religious adherence rates, the net of tax rate, the log charitable giving per return, and the percent of AGI donated to charity across the United States. Figures 1-6 confirm that Latter-day Saint religious adherence is highest in the Mountain West, specifically in states like Utah, Idaho, and Wyoming. They also illustrate that Evangelical attendance is greatest in the American South, and that these two regions, the Mountain West and the South, are two of the three most pious regions in the US by overall religious adherence, the other being the Midwest, specifically states like North and South Dakota.

Figures 7-10 display the log charitable giving per return, and the percent of AGI donated to charity across the United States in 2010, both at the county and state level. Apart from indicating that both outcome variables are particularly high in the Mountain West, these graphs also suggest that there is substantial missingness across counties due to redaction in the county-level tax return data.

Figures 11-13 offer a snapshot of the marginal net of tax rate across the United States in 2010 as well as the time series of the net of tax rate between 2010 and 2016 for each state. Apart from revealing that states like New York, California, and Oregon impose high marginal tax rates, these figures also, more importantly, indicate that all states, and, thus, counties, experienced a marginal tax increase at the federal level in 2013. This shock offers variable percentage decreases in each state's net of tax rate depending on their state tax rate in 2012, providing ample variation for the regression to exploit.

The primary regression table of interest, Table 1, indicates that none of the coefficients are statistically significant. While this lack of statistical significance presents a challenge to

offering conclusive insights, valuable trends and patterns in the data nonetheless exist. For example, though there is insufficient evidence to indicate that β_1 , the elasticity of charitable giving, is non-zero in any regression, the fact that it is consistently below -1 across columns could suggest that, with more years of data, the elasticity of charitable giving would be confirmed as treasury efficient. Likewise, the interaction term on the Evangelical adherence rate, while not statistically significantly different from 0, is estimated to be 0.518, a number in line with the assumption that Evangelical people's donating habits are less sensitive to changes in the marginal tax rate than non-Evangelical people, but that they are likely more sensitive than Latter-day Saint people given that Latter-day Saints tend to adhere to a strict tithe more often. Intuitively, it also makes sense that the β_1 value in column 1 is lower than the β_1 values in columns 2-4 because most counties in the United States have substantial religious adherence rates. The interaction term in this first column is also negative, in contrast to the coefficient terms in columns 2 and 3, plausibly because a total overall religious adherence doesn't give much insight on a population's tithing population because religious practices vary widely across traditions.

The coefficient on the β_2 term in the LDS regression is 0.644. Setting aside questions of statistical significance, this coefficient would suggest that a county with 100% LDS adherents would have an elasticity of charitable giving that is 0.644 percentage points greater than a similar county with 0% LDS adherents. Intuitively, this follows the hypothesis that Latter-day Saints are less sensitive to changes in the marginal tax rate due to their tithing practices. For example, supposing that β_1 was statistically significant and that the average elasticity of charitable giving for a non-LDS county was -1.066, a 1 percent increase in the marginal tax rate would correspond

to a 1.066% increase in charitable giving. Then, the 0.644 interaction term would suggest that a 1 percent increase in the marginal tax rate in a wholly LDS county would lead to a $(1.066\% - 0.644\% = 0.422\%)$ increase in charitable giving.

When regression 1 is repeated at the state level in Table 2, similar patterns emerge. The charitable elasticity estimates cluster around a shared negative value — in this case, -1.8. Similarly, while tables 3 and 4 measure a different outcome variable, they nonetheless convey that counties and states with high Latter-day Saint populations are less elastic in their charitable giving response to marginal tax changes than non-LDS counties and states. The values of the Evangelical interaction terms are, again, not statistically significant, and their direction is more inconsistent. This is plausibly because there is less uniformity in the beliefs and practices of Evangelicals compared to Latter-day Saints. Where the Latter-day Saint movement is overwhelmingly composed of members of the hierarchical, internationally standardized Church of Jesus Christ of Latter-day Saints, many separate disjointed denominations constitute the Evangelical branch of Christianity.

Conclusion

While the results offer limited statistical significance, likely due in part to the narrow range of years in the panel dataset and the lack of granularity in the aggregated county- and state-level returns, there, nonetheless, exist important takeaways from the research. Firstly, there is evidence to suggest that religious communities, specifically counties with large Latter-day Saint populations, when experiencing an increase in marginal taxes, increase their charitable donations less than counties without large Latter-day Saint populations. This is plausibly related to the LDS practice of donating 10% of one's income to the church as tithing, regardless of one's marginal tax rate. Acknowledging that the values are not statistically significantly different from

zero, the calculated elasticities tend to cluster around values just below -1, indicating that the charitable deduction could be treasury efficient.

There exist several, significant limitations to this paper. One of which is the assumption that the highest income bin earners within the IRS data would be subject to the highest marginal tax rate at both the federal and state levels in any given year. In reality, thresholds for the highest marginal tax rate differ across states, and earners in the highest bin of \$200,000 or more in income may not always be paying the highest marginal tax rates. The NBER data reflect the highest possible marginal tax rates, and, since some states like New York have separate marginal tax rates for those who earn incomes into the millions of dollars, the regression could be overestimating people's tax burden. While this would only affect a handful of states, this misspecification could mean that the actual elasticities are greater in magnitude than what is measured, since people who were not affected by marginal tax rates are being treated as if they were. Similarly, there are a handful of counties in states like New York and Maryland that impose additional income taxes that are not accounted for.

Another limitation is the lack of information on the religious identities of the highest-earning taxpayers in a county for each year, and the potential inaccuracy of the assumption that the religious breakdown of a county in 2010 is reflective of the religiosity of the highest-income taxpayers for every year between 2010 and 2016. Given that secularity is moderately correlated with higher income, it is plausible that higher earners in a county are generally less religious than the data would suggest. This could lead to interaction term coefficient values that are inflated in magnitude.

The privacy-minded redaction of less populated counties with few high earners presents the possibility of non-response error. However, since I am weighting counties by the number of

returns they report, this possible error is unlikely to make a significant difference. Likewise, since adherence rate is measured by the number of attendees at a given church, smaller counties that possess large megachurches can also exhibit adherence rates that may not be representative of the actual population. However, these counties are unlikely to weigh heavily in the coefficient estimates.

In terms of policy recommendations, if there is reason to suspect that tithing donations to religious institutions might not be as effective in improving communities and redistributing wealth as other charitable donation channels, the government may be concerned that charitable giving is less elastic to marginal tax changes for tithing communities. In this case, a policy might be implemented to cap the amount of money that can be donated to church and still be considered tax-deductible, or reduce the ratio of tax deductibility for charitable donations from 1:1. However, if tithing donations are effective in improving communities, the government might not be concerned by the less than treasury efficient elasticity of certain religious communities given that they generally donate more than others.

For future research, I would like to expand both the number of years considered in my panel data as well as the number of religious faith traditions that I look at explicitly. Of particular interest to me are Muslim populations, many of whom practice zakat, paying roughly 2.5% of their income to charity every year. Given that Seventh-day Adventists, like Latter-day Saints, also observe a mandatory tithe, I am interested in whether they likewise cluster geographically and significantly affect county-level elasticities to charitable donations. Similarly, Evangelicals are not a monolithic group, and I would like to consider more granularly the patterns of distinct religious groups like Baptists and Lutherans.

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