The Tax Exemption for Charitable Property: An Empirical Assessment

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Abstract

I offer the first multi-jurisdictional assessment of the balance-sheet effects of the property-tax exemption for charitable property. I combine a manually-assembled dataset of property tax rates in over 4,000 municipalities with three large samples of firm-level administrative data, as well as hand-coded variations in the legal details of different states' exemption regimes, to assemble a panel of more than 1 million firm-years.

As expected, exemption causes charities to utilize more real property as tax rates rise. I offer new theoretical contributions showing that this effect, previously described as an unwanted distortion, may be second-best efficient in the presence of an income tax with accelerated depreciation, and confirm empirically the predictions of this new theory. Exemption also increases managerial compensation while crowding out efforts to raise revenue through donations and commercial activity. Lastly, exemption eases liquidity constraints on colleges and universities, allowing them to expand enrollment while holding per-student costs level.

1.0 Introduction

Every U.S. state exempts some or all of the property owned by nonprofit organizations from real property taxes. Rough calculations from Cordes et al. (2002) imply that the aggregate value of these exclusions exceeds $18 billion in current dollars annually. The property-tax exclusion, in other words, is worth more than 28 percent of the subsidy provided through the federal charitable contribution deduction (U.S. Treasury 2018). Yet while there are hundreds of articles examining the cost-efficacy and other features of the federal deduction, "there is very little theoretical work and even less empirical analysis of hypotheses regarding the effects of the property tax exemption" (Sjoquist & Stoycheva 2010). Most existing justifications for the exemption point to history, and occasionally to the separation of church from state, rather than any coherent economic rationale (Brody 2002, 2007, Zelinsky 2017).

The lack of economic analysis is not for want of desire or interest. For a century or more, experts have called for more careful scrutiny of the benefits and detriments of exemption. The obstacle has been data. Property taxes, in particular, offer a dense tangle of local variations in rates and rules. A single parcel can be subject to the property taxing jurisdiction of municipal, county, state, and multiple special-purpose taxing districts.

In this Article, I offer the first multi-jurisdictional assessment of the exemption's effects across the nonprofit sector. In order to do so, I create the first (nearly) nationwide panel of property tax rates, which I hand collect and collate up to the municipal level. [In this version, I report results from a smaller dataset of manually-assembled dataset of property tax rates in over 100 municipalities, resulting in a panel of more than 48,000 firm-years, stretching from 1995 to 2012.] These rate data are then combined with a large sample of federal Form 990 charitable-organization tax returns, as well as hand-coded variations in the legal details of different states' exemption regimes, yielding over 1 million firm-year observations. Alternative specifications draw on a much smaller but comprehensive database of private post-secondary institutions from the U.S. Department of Education (the "IPEDS" data).

With these data, I am able to examine three sets of outcomes. The first tests the fundamental assumption of exemption, namely, that it actually provides a cost benefit to charities. The second set examines possible unwanted side-effects of exemption, such as greater opportunities for managerial rents. Lastly, I offer a preliminary look at evidence that the benefits of exemption in fact reach those served by charity. In brief, exemption appears to correlate with more property usage, more manager pay, and less fundraising and commercial activity across the sector as a whole, and expanded enrollment at colleges and universities.

For each of these, my main variable of interest is the tax rate applicable to commercial property in the municipality where a given nonprofit firm is located. Local deviations from the mean national property tax rate generally capitalize into local property values [cites]. Changes in property-tax rates can therefore be interpreted as variation in the value of the subsidy exemption provides to local nonprofits. I also exploit some differences in local definitions of exempt property.

I find evidence that exemption does indeed fulfill its basic promise of underwriting charity, and offer the first estimate of the magnitude of this effect. A one-percent increase in local rates is correlated with a .09 percent increase in nonprofits' occupancy costs, increasing to .13 percent in the handful of jurisdictions that exempt property rented but not owned by a charity. A similar regression shows larger coefficients, around .17, for the relationship between property taxes and the fair-market value of land and buildings reported by higher education institutions in the IPEDS data. These shifts give strong support to the theory that exemption creates substitution effects in favor of property usage.

Some prior commentary suggests that the tax-driven portfolio effects I identify represent a mixed blessing. Although substitution effects evince new resources available to property-using firms, tying the subsidy to property also distorts the nonprofit firm's pre-tax decisions. It also potentially favors charitable goals that can make effective use of property over alternative nonprofit ends.

I refine prior theory to show that exemption's portfolio effects can be seen as second-best efficient, in that they correct other portfolio distortions created by the corporate income tax. Efficient subsidies in the income tax system, to the extent that they alter prices for subsidized inputs, produce inefficient opposite-signed distortions for tax-indifferent firms. As a simple example, consider that it is usually foolish for a tax-exempt entity to hold tax-exempt municipal bonds.

My refinement produces testable predictions I confirm in the data. The most important income-tax distortion for real property is likely accelerated depreciation. Since land is not depreciable, my theory predicts that the share of land in a nonprofit's real property portfolio will be declining in the tax rate. While nonprofits will prefer to rent buildings when property tax rates are low, they are willing to purchase land even at very low property-tax rates. The share of buildings as a fraction of fixed assets held by the nonprofit should rise with tax rates, because the benefits of exemption become more and more likely to exceed the detriments of depreciation. Consistent with this prediction, I find that the elasticity of land share to tax rates is -.28.

At the same time, I find evidence that exemption offers greater opportunities for managers to extract rents, though the social welfare story again is nuanced. Most directly, I find that of the free cash flows created by exemption, managers capture about four percent in the form of executive compensation. Compensation for non-officers has no measurable relation to tax rates. Similarly, at colleges and universities the number of administrators per 100 full-time equivalent enrollees rises by .17 percent for each one-percent increase in tax rates, with no effect on faculty.

The new resources represented by exemption also seem to change managers' efforts to secure other sources of funding. Andreoni & Payne (2011) build on earlier theorizing suggesting that resource shocks may crowd out managerial fundraising effort (e.g., Steinberg 1987), and they in fact find evidence that government grants are correlated with diminished fundraising. In the same vein, I find that fundraising expenditures decline with rising property tax rates, and that this effect is driven by subsectors of charity that on average are most dependent on property usage. At the same time, I cannot rule out the

possibility that exemption has no impact on donations, in which case reductions in fundraising would appear to be social welfare enhancing (Galle 2016 provides a more complete description of the relation between fundraising and welfare).

Prior literature offers competing predictions for another source of revenue, commercial activities. Plausibly, the same logic that applies to fundraising would extend to firm endeavors to raise revenue through business activity unrelated to its charitable mission. For example, Hines (1989) reports that UBIT rises when tax subsidies for donations fall. Cordes & Weisbrod (1998), however, argue that for property taxes in particular, there are potential tax advantages to unrelated businesses that might outweigh managers' incentives. In pooled regressions, they find that the share of revenue from commercial activity is about 3.3 percentage points higher among firms in the ten states with the highest average commercial property-tax rates, though they find no significant effect of tax rates on the extensive margin. Since states do not impose property taxes, their tax-rate variable appears to be an average across urban and rural areas, though most charities are located in higher-tax urban venues.

The Cordes & Weisbrod (1998) argument rests on a mistaken legal premise. Employing panel regressions and considerably more-detailed data on municipal-level property tax rates, I find to the contrary that higher rates are correlated with both extensive- and intensive-margin declines in unrelated business income. I find that these results are driven primarily by firms with the greatest need for real property in their charitable operations, implying that the shift may well be driven by managerial distaste for commercial activity. That is, since firms receiving the largest subsidies are the most elastic in their shift away from commercial activity, I infer that subsidies free managers to sacrifice revenue in satisfaction of their preferences.

Should social planners be happy about managerial disinterest in UBI? Some commentators argue that unrelated businesses distract managerial time and attention away from nonprofit mission (Aprill 2002), suggesting that any shift away from UBI may be salutary. On the other hand, some commentators argue that UBI can create economies of scope with other valuable public goals (Malani & Posner 2009; Steinberg & Galle 2018 discuss this tradeoff in more detail).

Turning lastly to the bottom line, direct measures of whether the property tax exemption actually impacts the quality or quantity of charitable outputs are difficult. I find no evidence that property taxes affect charitable expenditures in the 990 data. However, using the IPEDS data, I find a 1% increase in tax rates correlates with about a .07% increase in student enrollment, with corresponding increases in tuition collected. In combination, these findings suggest that liquidity constraints—specifically, the up-front cost of building classroom, office, and dorm space—may play some role in limiting the extent to which higher education institutions expand their capacity.

While I am the first to report these outcomes, other studies have considered related aspects of the role exemption plays for charities. Most studies have focused on hospitals. Chang and Tuckman (1990) consider the impact of exemption on non-profit hospital market share in Tennessee, and Gulley and Santerre (1993), Gentry and Penrod (2000), and Hu

(2006) expand that analysis nationwide. Hansmann (1987) reports the effects of exemption on nonprofit share in two health and two educational subsectors, drawing both on state-level statutory rates and statutory rates in the largest city in each state.

Another closely-related antecedent is Fei, Hines, and Horwitz (2017). They examine the impact on Massachusetts charities of PILOTs, or payments in lieu of taxes. Although roughly a mirror-image of my analysis, their findings suggest more dramatic impact: these tax-like instruments reduce affected nonprofits' use of real property, with an elasticity, around -.8, an order of magnitude larger than mine. I extend their study nationwide, and apply it to a variety of additional outcomes. Further, because PILOTs are the result of ad hoc bargaining between taxing jurisdictions and individual charitable organizations, it is unclear in theory whether their impact can be generalized to predict the effects of more regularly imposed property taxes.

Overall, my findings offer ammunition for both sides of the property-tax debate, and perhaps provide a cautionary note on the use of tax instruments to achieve policy goals. I confirm that tax exemption provides value to charitable organizations, and offer some limited evidence of its benefits for output at institutions of higher education. In doing so, though, it brings the portfolio effects critics have identified. Exemption may be second-best to the extent it is correcting distortions created by the income-tax system. But it may be preferable instead to reform income-tax incentives so that they do not need correction. Further, in jurisdictions that grant tax exemption even to charity-rented property, there is no corrective effect, suggesting that these statutes may be less efficient than those requiring nonprofit ownership.

2.0 Background

The exemption for charitable property is a longstanding feature of U.S. state tax regimes, stretching back to the colonial period. In its original conception, the purpose of the exemption was not the modern notion of supports for the production of public goods (Weisbrod 1975) nor as a mechanism for supporting organizations whose non-distribution constraint might close them off from access to capital (Hansmann 1981). Instead, it was thought of as an acknowledgment that the legal authority of the state over charities—or over churches, at least—was limited (Brody 2007).

Perhaps for that reason, the exemption has never been subject to serious scrutiny under modern economic rationales. Cordes et al. (2002) is the only comprehensive attempt to estimate the likely budget impact of exemption. Analysis of the charitable contribution deduction has focused on whether the deduction is "treasury efficient"—whether it results in more dollars of net charitable output than the government surrenders in revenue. A standard benchmark for treasury efficiency is a price-elasticity of giving of -1.0, as at this point—assuming away fundraising and other potential diversions—small changes in the value of the deduction result in more dollars in new donations than subsidy dollars allocated (Galle 2016). There is no similar assessment of the property tax exemption in the existing literature.

The political economy of the exemption may also have worked to limit the scrutiny it's been subject to. U.S. property taxes are collected primarily by local governments, but

subject to rules established by the state legislature or state constitution (Bowman 2003). Exemption is thus a kind of "unfunded mandate" in which state legislators can claim credit for relieving local charity of a tax burden without seeing the impact of the exemption on the budgets they directly control (Galle 2016b, Zelinsky 2017).

Local governments have attempted to reclaim some of their own budget authority through the mechanism of "payments in lieu of taxes," or "PILOTs." A PILOT is a "voluntary" payment, typically negotiated individually between a charitable institution and its local government, in which the charity agrees to pay over a portion of the taxes that would be due if the institution's property could legally be taxed. Since charities often depend on local political goodwill for zoning and other potential regulatory reasons, it is unclear to what extent these payments are truly voluntary, but there appears to have been no successful legal challenge to the practice. PILOTs are largely concentrated in Pennsylvania and New England (Langley, Kenyon, & Bailin 2012).

In simple models, the effects of exemption are predictable in sign but not in magnitude (see Sjoquist & Stancheva 2010 and Steinberg & Galle 2018 for surveys). Because local variations in property tax rates are generally capitalized into asset prices, exemption creates a clientele effect in which exempt purchasers have a price advantage. While tax rates are typically only a few percentage points, a buyer expects them to be imposed annually on long-lived property, so the net present value is not small. A thumbnail estimate suggests that the mean value of fully-capitalized property tax savings for forty-year property, assuming a five-percent after-(income) tax rate of return on alternate investments, could exceed $1 million (in 2012 dollars) per firm in my sample, about a 20-percent cost savings.[1]

The resulting subsidy should allow firms to expand or improve output as well as, in the presence of agency costs, to deliver additional rents to insiders. Tax exemption can help nonprofit firms overcome their usual barriers to outside financing (Hansmann 1981; Steinberg & Galle 2018 summarize recent literature on whether nonprofits are net disadvantaged in obtaining debt financing). Depending on manager preferences, the resource shock from exemption may crowd out other potential revenue sources (Andreoni & Payne 2011). Since the size of the subsidy depends on the value of property purchased, exemption should encourage qualifying organizations to utilize more real property, shift to more property-intensive means of production, acquire higher-quality property (Goolsbee 2004), to locate in more expensive areas, or some combination.

In a more general equilibrium model, however, whether nonprofits are net tax-favored under an exemption regime is complex and depends on the tax treatment of the marginal for-profit purchaser of real estate (or, in a CAPM model, the treatment of all buyers, see Brennan 1970 and Gordon & Bradford 1980). When tax depreciation is faster than economic depreciation, capital investments are tax subsidized. Since land is generally

[1] Mean firm land, business, and equipment assets is around $5.175 million in 2012 dollars. The average tax rate is 2.37 percent. I assume full, straight-line economic depreciation over the forty-year period. That is, I assume taxable property values decline by 1/40 per year over the life of the property.

not depreciable, this effect would impact only buildings and other improvements to real property. The exclusion of imputed rent may additionally favor taxable business operators, while favorable rules relating to the financing of real estate purchases can subsidize taxable investors (Gordon, Hines, & Summers 1987).

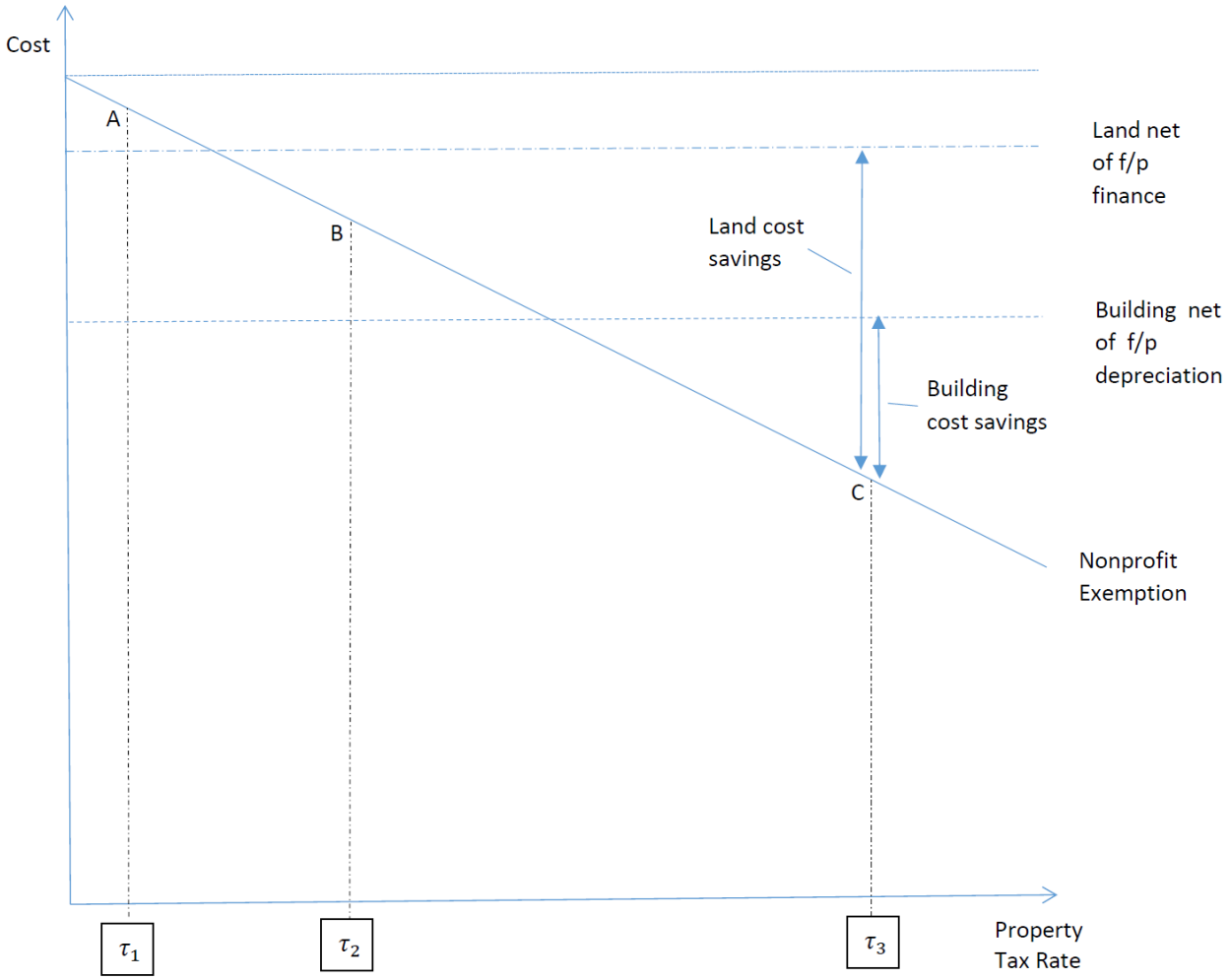
All of these factors may or may not impact nonprofit ownership, depending on their incidence. If these tax subsidies are largely capitalized into sales price, then their unavailability to tax-exempt buyers will tend to depress nonprofit purchases. Alternately, if subsidies are wholly captured by purchasers, nonprofit buyers will be largely indifferent to the existence of the subsidy. A third possibility, suggested by the "new view" of the property tax, is that real estate subsidies benefit all capital, which similarly would tend to imply a minor impact on nonprofit purchases.

Tax subsidies may also alter nonprofit purchase decisions by affecting the rent/buy margin. In some states, property tax exemption extends to any property "used" by the charity, whether or not owned by the user. From this distinction alone, we might predict that property ownership would be higher in states that require ownership for exemption. But a charity that owns its own property forgoes any possible share of the tax subsidies provided to taxable landlords. In a perfectly competitive market, tenants would capture the value of depreciation and finance-cost savings for landlords (Gordon, Hines, & Summers 1987). If these savings are larger than the value of the exclusion, the nonprofit should rent, setting aside any possible agency costs of renting (Sjoquist & Stoycheva 2010).

While there is now widespread evidence that tax benefits for residential property accrue almost exclusively to sellers (e.g., Moulton, Waller, & Wentland 2018), evidence on the incidence of tax rules for commercial property is mixed. Sinai & Gyourko (2004) report that one particular subsidy was captured "mainly" by purchasers. [others?] Goolsbee (1998) finds that incentives for business equipment are predominantly allocated to suppliers and workers, with only about 30% benefiting the business nominally claiming the tax benefit.

In sum, the effect of exemption likely varies depending on the relative value of owning and renting. Infra-marginal renters will be largely unaffected by exemption, except in states where "use" is sufficient for exemption. For marginal renters, on the other hand, exemption also potentially affects decisions at other margins, such as the amount of property to acquire and the mix of capital and labor inputs. Again, since the tax benefits of ownership may vary within firms according to the nature of the property, a given charity may be infra-marginal with respect to some assets and marginal with respect to others. For instance, we might expect that charities will be more inclined to purchase low-value improvements, such as athletic fields or parking lots, because depreciation of these assets is modest. Figure One illustrates these possibilities.

Figure One: Tax Benefits and the Nonprofit's Rent or Buy Decision When Exemption Requires Nonprofit Ownership



In the Figure, a nonprofit's rent or buy decision depends on the relative values of tax benefits available to the nonprofit or its tax-paying landlord. Suppose for a given piece of property that the for-profit firm's income-tax benefits are fixed, and are larger for buildings than for land. At a low tax rate τ_1, the nonprofit's cost, represented by point A, is still higher than a for-profit buyer, whether the property is land or building. Thus, at τ_1 all nonprofit firms are renters, *ceteris paribus*. If tax rates are the intermediate rate τ_2, the nonprofit will have a cost advantage if it purchases land, but not depreciable buildings. Finally, at the high tax rate τ_3, the nonprofit faces a lower price for all properties. Its net savings are not, contrary to most prior literature, the full difference between the top dash-dot line and point C. Instead, it faces a cost savings as a result of exemption, but also a cost increase as a result of income-tax advantages it cannot claim. Its net cost advantage is thus larger for land, although this difference is declining (in percentage terms) as property tax rates increase.

One implication of this slightly more nuanced account of the exemption than others have provided is that prior work on PILOTs likely cannot be generalized to the property tax. Fei, Hines, and Horwitz (2017) find that PILOTs reduce reported property holdings by nonprofits, and arguably this result could be extrapolated to infer the benefits of tax

exemption. To extrapolate properly, however, we would have to be able to estimate what share of nonprofits are marginal renters, as it is only this fraction that would take up the exemption subsidy. Moreover, since PILOTs are negotiated, potentially in exchange for other regulatory benefits, they may more closely resemble user fees than taxes. By estimating the benefits of exemption directly, I can more precisely estimate exemption's mean effects.

3.0 Data

Prior studies of the property tax exemption have drawn on unreliable measures of the value of the exemption. With one exception, these studies rely on imputed state-wide property tax rates, even though property-tax rates are set locally. Moreover, they do not use actual statutory rates, but instead calculate an average effective rate by dividing statewide tax receipts by estimates of the taxable base. Thus, the tax variable in these studies is subject to several forms of measurement error: among others, it assumes that rates are uniform statewide, when in fact they are higher in the municipal areas where most charities are located (Hansmann 1987), and (except in the case of Cordes & Weisbrod 1998, which relies on commercial rates only) it blends rates for residential and commercial properties, which are often highly divergent. The exception, Hansmann (1987), accounts for local variations in property tax rates, but does not explain how those rates were measured or calculated.

To more precisely measure the value of exemption, I employ actual effective commercial property tax rates at the municipality level. Nationwide rates at this level of detail are available via a commercial vendor through about 2008. To extend the analysis farther back in time, and to make these data free to other researchers, I have assembled by hand a panel of rates from forty-four states and the District of Columbia, ranging as far back as 1998 in some states. Details of the assembly and calculations, as well as in-depth summary statistics, are set out in Galle & Safak (2019); the assembly process is replicated here in the Appendix.

[For this more limited version, I scrape commercial property tax rates for over 100 municipalities nationwide, including the largest in each state and the largest 50 overall, from compilations created by the Lincoln Institute for Land Studies and the Minnesota Center for Fiscal Excellence ("MCFE"). I am able to assemble a panel of these data for 1995, 1998, and 2000 to 2012.

The primary variable of interest I employ in the MCFE tax data is the commercial rate for $1 million property. For each covered jurisdiction, MCFE reports separate effective property rates for residential, industrial, and commercial properties at several discrete values. The rationale for this approach is that some jurisdictions grant an exemption amount, particularly for owner-occupied residential property.[2] Many jurisdictions also in

[2] In theory, calculating an average tax rate net of a flat exemption amount would not reflect the marginal tax cost of an additional dollar of property consumption. For my commercial property data, this is not a concern, as exemption amounts are mostly a feature of residential rather than commercial tax rates. Further, as I note below, my results are essentially unchanged if I use MCFE's

effect discount the nominal statutory *ad valorem* rate by assessing property at only a fraction of its fair market value. Thus, MCFE calculates an effective tax rate at set property value amounts by applying these rules and the statutory rates, and then determining what fraction of the property's value is ultimately due in tax. More detail on MCFE's calculations can be found in Minnesota Center for Fiscal Excellence (2016).

MCFE's $1 million commercial property rate offers the rate that would, absent exemption, most likely be applied to the nonprofit organizations in my data. In some jurisdictions churches and certain other religious organizations can build in neighborhoods zoned for residential use. But these organization do not file tax returns, and therefore do not appear in my data. Although MCFE also calculates a commercial rate for $50 million commercial property, few organizations in my data hold *combined* assets in that range, let alone a single property. Further, there is almost a 1.0 coefficient of correlation between MCFE's $1 million and $50 million commercial property rates. My results are essentially unchanged when employing the $50 million rates.]

I combine the property tax data with three public sets of administrative data. The first is a compilation of individual Form 990 tax returns filed annually by exempt organizations, made available by the National Center on Charitable Statistics in their "SOI-PC" files. I collect data for tax years ranging from 1994 to 2012. Each annual SOI-PC file is a stratified sample of the population of tax returns filed by federally-recognized charities, with overweighting of firms with greater assets; firms with more than $10 million in assets are always included. Stratification naturally raises concerns about whether the criteria for weighting may be correlated with outcomes of interest. My results are robust to sample weighting. I clean the SOI data using the protocol described in Galle (2016).

[In addition, the IRS has made available tax returns of every electronically-filing charitable entity from 2008 to the present. These returns include additional fields of interest in the study, such as separate reporting of the value of land and buildings. I repeat my analysis in both sets of tax return data, but results for the e-filing files are not reported in this version of the paper.]

The third set of data are financial and other institution-level variables drawn from the Integrated Postsecondary Education Data Systems ("IPEDS"), which is administered by the National Center for Education Statistics. Participation in the IPEDS annual survey is required by the Higher Education Act of 1965 as a condition of the federally-subsidized student loan program. As a result, IPEDS includes data from essentially every private nonprofit college and university in the United States, although not all fields are included in the survey in every year.

State laws governing exemption vary slightly by state. Sjoquist & Stoycheva (2010) summarize the results of a non-public 2002 study by Woods Bowman (Bowman 2003 describes the study but does not detail its findings). Prof. Bowman was not an attorney and appears at times to have confused state constitutional language authorizing the legislature

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tax rate for $50 million rather than $1 million property, suggesting that any differences caused by adjusting for exemptions are minimal.

to grant tax exemption with statutory provisions actually exercising that authority. I instead hand-collect and code state constitutions, statutes, and decisional law. Contrary to Bowman, I find only seven states in which property used but not owned by a charitable organization is exempt from property tax, one of which (Nebraska) is not identified in Sjoquist & Stoycheva. There were no changes in relevant laws during the sample period. I additionally hand-collect variations in law governing whether nonprofit-owned investment property is exempt, and find no differences from Sjoquist & Stoycheva.

Finally, I incorporate information on average PILOT rates from the survey and calculations by Langley, Kenyon, and Bailin (2012). Their data are not a panel, but single-year observations in a number of jurisdictions, over a period ranging from 2003 to 2012.

All dollar-denominated variables are deflated to 2012 dollars using chained CPI. Calendar-year variables, including year effects, are matched to fiscal years by assigning a calendar year containing the majority of the firm's fiscal months. Fiscal months ending in June are assigned to the prior calendar year. For firms for which a founding date was unavailable, firm age was calculated as the time from the firm's ruling date or the first year the firm appears in the data, whichever was longer.

4.0 Identifications and Methods

I examine the effects of property tax exemption on a number of potential nonprofit firm outputs. Obviously, I test the relationship of tax rates to measures of each firm's uses of real property. As discussed in Section 3.0, though, tax exemption is also a kind of positive resource shock, and inflows of new cash have the potential to change how firms fundraise, pay their workers, and seek other forms of revenue, as well as potentially influencing donors.

My options for identification strategies are limited by the nature of the property-tax data. Within-jurisdiction variation in property tax rates is modest in most jurisdictions. As a result, I am obliged to rely primarily on cross-jurisdictional variation. For most of the reported estimates, I employ a general estimating equation panel ("GEE"), sometimes also known as a "panel average" regression. GEE is similar to a random effects panel, but does not require the strong assumption that error terms are uncorrelated with the regressors (for more detail, see Gardiner et al. 2009). The interpretation of GEE coefficients is slightly different than in a standard fixed-effects model; a GEE coefficient represents the average difference between treated and untreated groups. For my purposes, this nuance is not significant.

There is no significant concern that tax exemption policy may be endogenous to outcomes of interest. Nearly all the relevant provisions are longstanding, with many antedating the U.S. Constitution. Conceivably nonprofit accumulation of exempt property could affect local tax *rates*, by removing property from the base, but this possibility is fairly remote. While there a few jurisdictions with substantial exempt property, the vast majority of exemptions are claimed by governmental property, not charities.

A related possible concern is that some jurisdictions regularly award development tax incentives to for-profit businesses. If these rewards are large and frequent enough, they

would potentially diminish the extent to which nominal property-tax rates are reflected in prices. If so, however, this would tend to bias my results against finding any effects of property taxes—any non-zero effects are despite this bias. But any null findings I report could conceivably be caused in part by this form of mismeasurement.

For outcome variables sometimes taking a zero value, when estimating effects on overall means I add $1000 to all observations before logging. I do not add any amount when estimating intensive margin effects. The unrelated business taxable income variable has positive, negative, and zero values. For regressions involving UBTI, I take the inverse hyperbolic sine instead of logging. IHS has properties similar to the natural logarithm across most of its distribution.

I control throughout for basic firm fiscal variables. As noted, I omit potential outcome variables as controls. Since property usage may vary by organizational mission, I include fixed effects for national taxonomy of exempt entity ("NTEE") codes. In addition, I control for state population, GDP, and median income, as well as calendar-year fixed effects. [In the next version, I control for municipal-level versions of these controls, as well as municipal spending and the state corporate income tax rate.]

Thus, a representative regression takes the form:

$$O_{it} = \alpha_0 + \beta_1 T_{mt} + \beta_2 T_{mt} * Use\text{-}Only_s + \beta_3 X_{it} + \beta_4 W_{st} + \gamma_i + \varphi_t + \mu_n + \epsilon_{it}$$

where is O_{it} a firm's occupancy cost and T_{mt} is the property tax rate in a given municipality and year. *Use-Only* is an indicator for whether a state grants exemption to properties rented but not owned by charities; it does not vary over time in my sample. X_{it} and are W_{st} vectors of firm and state controls, respectively, while is γ_i a firm fixed effect, φ_t calendar-year fixed effects, μ_n is a fixed-effect for charitable subsector, denoted by NTEE codes, and ϵ_{it} is the error term.

5.0 Results

5.1 Occupancy Costs

I first examine the impact property-tax exemption has on a firm's reported costs for office space and other facilities. Drawing on my hand-coding of state exemption law, I allow separate coefficients for states that require both charitable ownership and use, as well as state in which any property used for charitable purposes, regardless of ownership, is exempt. As Table Two indicates, in state requiring both ownership and use, one-percent increases in property-tax rates are correlated with about a .09 percent increase in occupancy expenses on average, and .08 on the extensive margin (Table Two Column Two).

Table 2: Effects of Property Tax Exemption on Occupancy Costs

VARIABLES	(1)	(2)
Log Tax Rate	0.0929**	0.0802***

	(0.0461)	(0.0253)
Log Tax Rate x	0.0486*	0.0158
Charitable-Use Property Exempted	(0.0278)	(0.0185)
Log Mean PILOT Rate	-0.0228	0.0319
	(0.0346)	(0.0207)
Log Total Revenues	0.556***	0.545***
	(0.0161)	(0.0134)
Log BOY Assets	0.0269*	0.0642***
	(0.0151)	(0.0130)
Log BOY Liabilities	0.0804***	0.0861***
	(0.00618)	(0.00625)
Firm Age	0.389***	0.213***
	(0.0249)	(0.0164)
Net Effect of Tax Rate in Charitable-Use States	0.141***	0.0959***
	(.050)	(.029)
Observations	48,252	38,555

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Column One: mean effects. Column Two: intensive-margin effects. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year and NTEE category fixed effects. "Charity Use Property Exempted" = indicator for states in which property used for charitable purposes but not owned by charitable organization is tax exempt. "Net Effect of Tax Rate in Charitable-Use States" = linear combination of tax rate and tax rate x charitable-use effects. **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

By themselves, results for the tax rate variable do not clearly establish that exemption increases nonprofit property usage. The occupancy variable includes all of a charity's "amount paid or incurred for the use of office space or other facilities," and includes utilities as well as "mortgage interest…real estate taxes, and similar expenses."[3] It is possible, therefore, that the increase in occupancy costs as tax rates rise reflects the pass-through of taxes to infra-marginal renters.

Results for property tax rates in states where any charitable use is exempt from tax are more persuasive. In these jurisdictions, there is no property tax to pass through to renters. The coefficient on the interaction variable reflects the incremental effect of renters' exemption. According to post-estimation testing, on average, the net combined coefficient is .14, or .096 on the intensive margin. Since these entities are not taxable, none of this increase can represent passed-through taxes. That the combined coefficient is larger than the result for property tax alone at least suggests that exemption leads firms in all states to purchase more real property, while infra-marginal renters in "use only" states additionally rent yet more property. It remains possible, however, that all of the combined effect for the

[3] Occupancy excludes costs related to investment properties and properties held for rental income.

interaction variable represents increased rentals by infra-marginal renters, with the increase reflected in the coefficient for the remaining states capturing tax pass-through.

5.2 Land and Buildings

Form 990 tax returns also report book values of each firm's combined land, building, and equipment ("LBE") holdings used for charitable purposes. Instructions for the Form 990 direct that book value should be computed as purchase price less a reasonable measure of economic depreciation. For newer properties, book value offers the econometrician some appealing features compared to fair market value, as firms without debt have no particular reason to accurately measure annual changes in the value of their real property. In theory acquisition price should be easy to measure, although firms have no particular incentive to verify its accuracy. Book is more problematic for older property, because it is not inflation adjusted. Older improvements may also have depreciated to zero value and so fail to appear on the tax return.

Table Three summarizes the impact of exemption on reported LBE. The results are initially puzzling, and may be attributable to measurement error. Increases in local property taxes are correlated with declines in reported LBE, with coefficients ranging from -.70 for mean effects (Column One) to -.10 on the intensive margin (Column Two). This effect persists when controlling for depreciation (Column Four). The measure of LBE I employ in these regressions include investment properties, which are subject to property tax in most states. The sample contains a measure of LBE exclusive of investment property for 1998 through 2007. Using this alternate measure of LBE reduces my observations by about 30%, but still produces essentially the same result.

Table Three: Effect of Property Tax on Book Land, Buildings, and Equipment

VARIABLES	(1)	(2)	(3)	(4)
Log Tax Rate	-0.0696*	-0.100***	-0.0380	-0.101***
	(0.0413)	(0.0377)	(0.0385)	(0.0305)
Log Tax Rate x	-0.0884***	-0.0522*	-0.0491	-0.0678***
Charitable-Use Property Exempted	(0.0286)	(0.0293)	(0.0334)	(0.0221)
Log Mean PILOT Rate	-0.0300	0.0229	0.0329	-0.0237
	(0.0378)	(0.0363)	(0.0419)	(0.0237)
Log Total Revenue	0.193***	0.188***	-0.00171	0.142***
	(0.0171)	(0.0238)	(0.0254)	(0.0137)
Log Total Expenditures	0.382***	0.424***	0.244***	0.0705***
	(0.0239)	(0.0299)	(0.0386)	(0.0173)
Log BOY Liabilities	0.114***	0.194***	0.734***	0.105***
	(0.00650)	(0.0104)	(0.0286)	(0.00569)
Log Firm Age	0.261***	0.168***	0.116***	0.150***
	(0.0275)	(0.0249)	(0.0307)	(0.0181)
Share of LBE in Land			0.746***	
			(0.177)	
Log Depreciation				0.540***

				(0.0147)
Observations	48,129	40,573	15,893	48,129

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Columns One, Three, and Four: mean effects. Column Two: intensive-margin effects. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year and NTEE category fixed effects. "Charity Use Property Exempted" = indicator for states in which property used for charitable purposes but not owned by charitable organization is tax exempt. Column Three covers fiscal years from 2008 to 2012 only. **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

Shifts in a firm's property portfolio from land to improvements may also explain the negative coefficient. Since land is not depreciated, its book value will tend to be higher than improvements, all else equal. If property taxes affect the mix of land and buildings, a move away from land would tend to diminish reported book values.

Why would tax rates affect the land/building mix? Recall that the net tax subsidy to a nonprofit firm is the excess of the value of property tax exemption over the tax benefits available to a for-profit buyer, assuming all of these are capitalized into prices. Once more, land is not depreciable, making its tax appeal to for-profits modest. Therefore, while nonprofits will prefer to rent buildings when property tax rates are low, they are willing to purchase land even at very low property-tax rates. As rates increase, it is more likely that the benefits of exemption will exceed the benefits of depreciation, increasing the share of buildings held by the nonprofit.

Consistent with this theory, I find that the share of land in a nonprofit's real property portfolio is falling with the local property tax rate, with a semi-elasticity of about -.026.[4] That is, a one-percent increase in tax rates correlates with a .026 percentage-point drop in land share. In elasticity terms, a one-percent increase in taxes correlates with a .278 percent decline in land share. Controlling for land share in LBE regressions results in no significant correlation between tax price and LBE.

A further reason to doubt the negative relationship between tax price and book LBE is that I find the opposite effect when using fair market values for land and buildings from the IPEDS database, as summarized in Table Four.[5] Since nearly all higher-education institutions issue debt, they have incentives to accurately value their property, which serves as an important source of collateral.

Table Four: Effect of Property Tax on FMV Land, Buildings, and Equipment among Private Colleges & Universities

[4] As a cautionary note, I should mention that I have separate data for land and buildings only for tax years 2008 and onwards.

[5] Coefficients for the effect of tax rates on land, building, and equipment are still negative in the 990 data if I limit the analysis to educational institutions.

VARIABLES	(1)	(2)	(3)	(4)
Log Tax Rate	0.249***	0.171**	0.0809	0.175**
	(0.0814)	(0.0728)	(0.0816)	(0.0853)
Log Tax Rate x	0.176*	0.114*	0.00843	0.00156
Charitable-Use	(0.0917)	(0.0662)	(0.0631)	(0.102)
Log Liabilities	0.365***	0.325***	0.296***	0.315***
	(0.0388)	(0.0416)	(0.0475)	(0.0352)
Log Total Revenue	0.0642	0.0256	0.0658	-0.0369
	(0.0676)	(0.0326)	(0.0444)	(0.0409)
Log Total	0.314***	0.439***	0.436***	0.699***
Expenditures	(0.0842)	(0.0703)	(0.0687)	(0.0662)
Log State &		-0.100***		
Local Approp.		(0.0142)		
Has Hospital?	-0.0467	-0.0427	-0.0471	-0.0724
	(0.0499)	(0.0552)	(0.0772)	(0.0496)
Observations	4,009	2,644	3,823	3,823

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Intensive-margin effects. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year fixed effects. "Charity Use" = indicator for states in which property used for charitable purposes but not owned by charitable organization is tax exempt. "State & Local Approp." = appropriations received from government entities. *: statistically significant at the 10% level **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

For private colleges and universities, a 1-percent increase in tax price corresponds to about a .25-percent increase in the fair market value of land, buildings, and other improvements.[6] This figure declines to about .17 percent when controlling for state and local payments to the institution (Table Four Column Two), although I have data for such payments only for about 65% of my observations. Nearly all the effect is concentrated in buildings: when I estimate results for land and for buildings separately, only buildings show a significant effect, with a coefficient of approximately .18 (Table Four Columns Three and Four, respectively).[7] All these estimates are on the intensive margin only; I find no extensive-margin effects.

Theory more readily explains my results for the interaction terms between tax rates and use-only exemption. In the SOI data, there is an incremental negative effect of tax rates on property ownership in use-only states (Table Three, Columns One, Two, and Four). That's as expected, given the added benefits of renting in use-only jurisdictions. The IPEDS

[6] These results remain significant, but with slightly smaller coefficient, when controlling for land share.

[7] Similarly, depreciation (untabulated) is positively correlated with tax price, with a coefficient of about .10.

LBE data estimate the value of property "owned, rented, or used" by the institution (Delta Cost Project 2012). Regression results suggest that the mean value of property owned or rented is larger in states where there is a benefit available for both owning and renting. This effect is similar in magnitude to the effects on ownership, with a coefficient between .11 and .17 (Table Four Columns One and Two), but significant only at the 10% level.

5.3 Alternate Revenue Sources

Changes in the tax subsidy environment may alter not only a nonprofit's use of property for charitable purposes, but also how it raises other revenues. Most obviously, if local tax policy favors charitable over investment uses of land, exemption might discourage firms from earning rental income. More generally, if managers dislike some forms of revenue-raising, government tax supports could allow managers to relax their efforts to bring in disfavored funds (Andreoni & Payne 2011). On the other hand, if nonprofits can engage in commercial activity without paying tax on property used in the enterprise, they will have a competitive advantage in investing in those activities relative to for-profit firms, and this may induce them to do so (Cordes & Weisbrod 1998, Cordes et al. 2002).

Consistent with the first set of hypotheses, and contrary to Cordes & Weisbrod (1998), I find that property tax policy discourages rental and other forms of unrelated business income. [8] First, I test the effects of exemption on charities' reported gross rental income. Using hand-coded information on whether state exemption laws provide exemption for property owned by a charity but rented out to non-charitable tenants, I allow coefficients for property tax rates to vary across states with and without such exemptions. As summarized in Table Five, rental income is lower on average in those states that tax these investment properties, and a 1-percent increase in tax rates is correlated with a further .27-percent decline in rental income. Effects at the extensive margin, as estimated by a panel probit and reported in Table Five Column Two, have negative coefficients but fall short of statistical significance.

Table Five: Effects of Property Tax Exemption Rules on Rental and Unrelated Business Income

VARIABLES	(1)	(2)	(3)	(4)
Log Tax Rate	0.132	0.0213	-0.305***	-0.0867**
	(0.0934)	(0.0447)	(0.103)	(0.0341)
Investment Property Taxed	-1.067**	-0.321		
	(0.512)	(0.253)		
Investment Property Taxed x Log Tax Rate	-0.275**	-0.0843		
	(0.133)	(0.0656)		
Log Mean PILOT Rate	0.0512	-0.00386	-0.0420	0.0446**
	(0.0383)	(0.0214)	(0.0662)	(0.0212)
Log Total Expenditures	0.177***	0.106***	0.191***	0.189***
	(0.0237)	(0.0139)	(0.0483)	(0.0201)

[8] According to instructions for the Form 990, reported UBTI does not include rental income.

Log Program Service	-0.0237	-0.0210***	-0.00833	-0.0216*
Expenditures	(0.0165)	(0.00807)	(0.0350)	(0.0125)
Log Assets BOY	0.0510***	0.0441***	-0.0430**	0.0539***
	(0.0107)	(0.00927)	(0.0168)	(0.0124)
Log Liabilities BOY	0.0169***	0.0214***	0.158***	0.0434***
	(0.00610)	(0.00446)	(0.0174)	(0.00676)
Log Firm Age	0.111***	0.180***	0.292***	0.154***
	(0.0296)	(0.0160)	(0.0413)	(0.0178)
Observations	48,649	48,640	48,651	48,651

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Column One provides OLS estimate of log gross rental income. Column Two provides a probit estimate of likelihood of firm reporting rental income. Column Three reports an OLS estimate of IHS UBTI. Column Four is a probit estimate of likelihood of firm reporting UBTI. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year and NTEE category fixed effects. **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

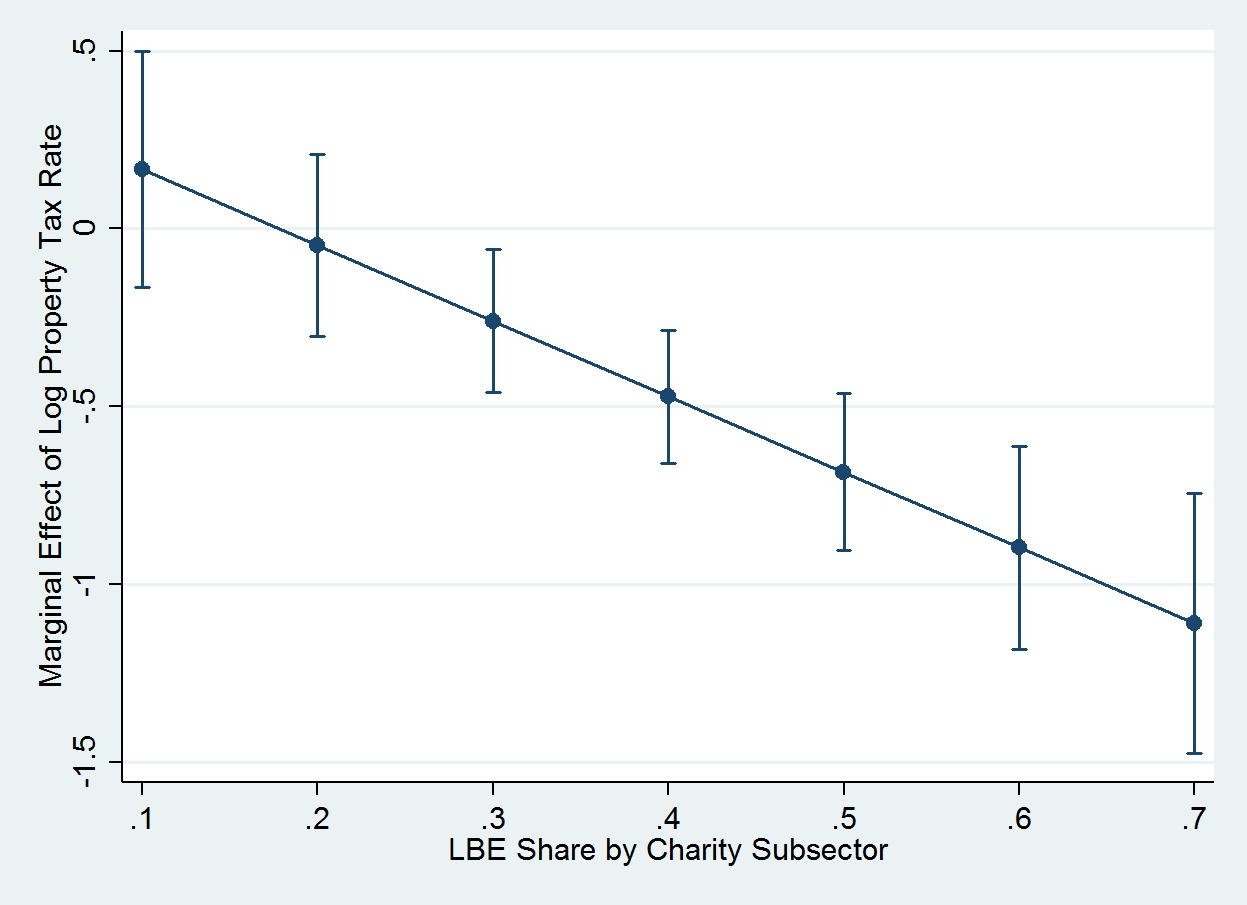
State property tax support also seems to reduce a firm's drive to earn unrelated business income, although there are rival interpretations of my results. A firm's likelihood of reporting unrelated business income falls by about .08 percent for each one-percent increase in the tax rate (Table Five Column Four), and net unrelated business taxable income falls about .3 percent (Table Five Column Three). Again, this drop might reflect managers' reduced need to engage in undesirable unrelated business activity.

Alternately, it is possible that business operations would increase the firm's property tax bill. Cordes & Weisbrod (1998:207-08) rely on the assumption that nonprofits can eliminate taxes on their commercial activity through accounting manipulations, allocating charity-related expenses to the for-profit activity. This works for the tax on corporate income, but not for property taxes, which generally do not provide for deductions. In my coding, all jurisdictions tax property put to non-charitable uses to at least some extent (Sjoquist & Stoycheva 2010: Table 21.1 concur), so the acquisition of new property or conversion of existing property to commercial use could result in new property-tax liability. Thus, the negative coefficient on tax rates could reflect the marginal tax imposed on property newly employed for unrelated business ends.

To unravel these two possibilities, I examine how the impact of tax rates varies across charitable subsectors. If the main effect of the subsidy is to ease pressure on managers to raise revenue, property tax rates should have a bigger impact in subsectors that are most dependent on real property for their charitable mission. Thus, for each major NTEE subdivision—health organizations, education, religious entities, and so on—I compute the yearly mean national share of assets held as land, buildings, and equipment. I then interact this term with property tax rates. This approach can be thought of as a kind of difference-in-differences design, in which the control firms are those in which property is not a significant input. National mean LBE share, the variable that makes up the treatment, is relatively exogenous to the tax rates of any given jurisdiction.

Consistent with the managerial preferences / "ease pressure" hypothesis, property tax rates are unimportant in subsectors with small LBE shares, and are increasingly important as LBE share rises. Figure Two summarizes the net marginal effect of log property tax rates across the distribution of LBE share.

Figure Two: Effects of Property Tax Rates on UBTI by Mean Subsector LBE Share of Assets



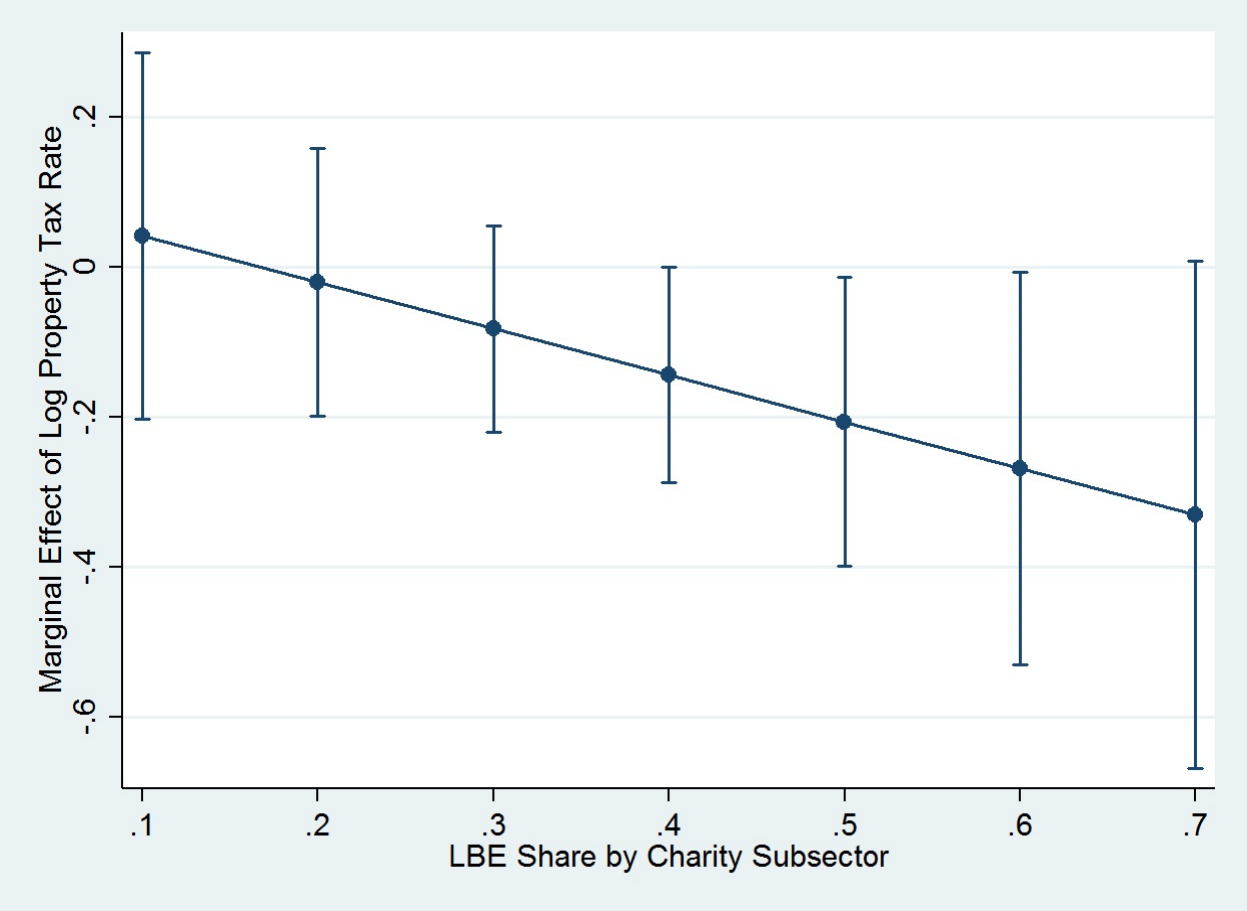
Notes: Predicted marginal effects with confidence intervals. Summarizes results of regression in which outcome variable is IHS unrelated business taxable income. Estimation is by panel GEE, with controls for mean PILOT rate, total and program-service expenditures, beginning of year assets and liabilities, firm age, state population, share under 19 and over 64, median income, and GDP, as well as a calendar-year and NTEE category fixed effects. Standard errors clustered by firm.

A similar pattern emerges for firm efforts to attract charitable contributions. Andreoni & Payne (2011) predict that resource shocks will crowd out fundraising effort if managers find fundraising undesirable. In regressions without interactions by LBE share, there is no significant mean effect of property taxes on fundraising expenditures.[9] When

[9] For the regressions described in this paragraph, I limit the sample to firms that ever report receiving donations.

marginal effects are allowed to vary by LBE share, however, among firms with the largest shares—those with a share of .4 or above—tax rates have a statistically significant negative impact on fundraising. For example, in firms with a share of .5, the 95% confidence interval for the effects of the property tax ranges from -.014 to -.40. Figure Three summarizes effects across the LBE share distribution. This crowding-out effect is consistent with the earlier finding, reported by Andreoni & Payne (2011) and replicated in Galle (2016), that occupancy costs are positively correlated with fundraising.

Figure Three: Effects of Property Tax Rates on Fundraising Expenditures by Mean Subsector LBE Share of Assets



Notes: Predicted marginal effects with confidence intervals. Summarizes results of regression in which outcome variable is log fundraising expenditures. Estimation is by panel GEE, with controls for mean PILOT rate, total and program-service expenditures, beginning of year assets and liabilities, firm age, state population, share under 19 and over 64, median income, and GDP, as well as a calendar-year and NTEE category fixed effects. Standard errors clustered by firm.

Notably, however, the decline in fundraising effort is not matched by any measurable change in donations (not shown). While confidence intervals are wide enough to include economically meaningful declines in giving, I cannot rule out zero effect. Although nonprofit fundraising does increase donations on average (Galle 2016, Yetman & Yetman

2010), a zero-effect result could be explained by a dynamic in which the bulk of the returns to fundraising are money that would have been donated to rival firms. Rising property-tax subsidies might permit competing regional firms to mutually disarm, allowing a greater share of nonprofit costs to go to the charitable bottom line.

5.4 Labor and Compensation

As with any capital subsidy, theory offers uncertain predictions about the impact property tax exemption should have on a firm's use of labor. If capital is made cheaper while labor costs are constant, firms may restructure their production process to favor capital. At the same time, capital investments typically increase labor productivity. Tax exemption can also have the effect of increasing free cash flows. Prior evidence suggests that free cash flows, even among nonprofits, can result in increased rents for managers (Galle & Walker 2014 summarize the evidence in the nonprofit sector).

I find that tax exemption is strongly correlated with managerial pay, but has no clear relationship to non-officer compensation or labor to capital ratios. As Table Six Column One reports, a one-percent rise in tax rates correlates with about a .044-percent increase in total compensation paid to officers. Results are unchanged (Table Six Column Two) if I account for potential cost of living differences by including nonofficer compensation as a control variable. Coefficients for non-officer compensation (Column Three) are very close to zero, albeit with relatively wide confidence intervals. The coefficient for the firm's payroll to asset ratio is negative as expected, but short of significance at traditional levels (Column Four).

Table Six: Effect of Property Taxes on Firm Compensation Paid

VARIABLES	(1)	(2)	(3)	(4)
Log Tax Rate	0.0442**	0.0450**	0.00465	-0.157
	(0.0214)	(0.0210)	(0.0202)	(0.141)
Log Tax Rate x	0.00715	0.00553	0.0330*	0.00221
Charitable-Use Property Exempted	(0.0123)	(0.0121)	(0.0188)	(0.0316)
Log Mean PILOT Rate	0.00418	0.00589	0.0456**	0.0548
	(0.0172)	(0.0165)	(0.0183)	(0.0591)
Log Total Revenues	0.321***	0.274***	0.606***	0.746***
	(0.00983)	(0.0115)	(0.0134)	(0.168)
Log Assets BOY	0.110***	0.118***	0.0381***	-1.230***
	(0.00981)	(0.00956)	(0.0120)	(0.265)
Log Liabilities BOY	0.0342***	0.0225***	0.0979***	0.0752**
	(0.00409)	(0.00420)	(0.00486)	(0.0314)
Log Firm Age	0.100***	0.0734***	0.328***	0.0517
	(0.0126)	(0.0122)	(0.0156)	(0.0690)
Log Non-Officer Compensation		0.0603***		
		(0.00733)		
Observations	33,488	33,488	39,322	39,293

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Columns One and Two: outcome variable is log officer compensation. Column Three: outcome variable is log nonofficer compensation. Column Four: outcome variable is ratio of compensation to assets. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year and NTEE category fixed effects. "Charity Use Property Exempted" = indicator for states in which property used for charitable purposes but not owned by charitable organization is tax exempt. **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

For a sense of whether the impact on officer compensation is an economically significant amount of money, consider that the mean total real officer compensation is $117,352. The mean tax rate in the sample is .0237, with a standard deviation of .0098. Thus, a one-deviation increase in tax rates is a 41.4-percent bump, and would correspond to a $21,376 aggregate raise for the firm's officers. For further perspective, the average firm holds a bit more than $5 million in (book) LBE assets. The mean tax rate in the sample is 2.37%, such that the mean exemption is worth $118,000 per year on a static basis. A one-deviation increase in the tax rate would provide an incremental savings of about $48,500. Based on this very simple yardstick, officer compensation consumes roughly forty percent of this new wealth. That is a back-of-the-envelope figure, to be sure, but large enough to suggest that agency costs at least modestly complicate any efficiency story about property tax exemption.[10]

5.5 Impact on Charitable Outputs

Finally, any policy evaluation of the property tax exemption should of course include a measure of whether exemption in fact changes the amount or quality of public goods charities produce. Unfortunately, tax return data provide very limited information on this front. The only available measure of charitable output is program-related expenditures. Since the purpose of the exemption is to *reduce* what charities must pay to their local government, it's unclear whether a positive effect of tax rates on charitable expenditures would represent success or failure. A soup kitchen that spends $10,000 less on kitchen space and $8,000 more on soup is likely expanding charitable output, but its tax return could be read to say otherwise.

Even if theory were clear, my outcomes (untabulated) are fairly inconclusive. I find no significant effects for firms overall, whether tax rates are included alone or are interacted with subsector-average LBE ratios. Firms in states where charitable-use rental property is untaxed show very small increases in charitable expenditures when tax rates rise, statistically significant at the 1% level. PILOTs reduce charitable expenditures in all states, also to a modest but statistically significant degree.

[10] To be sure, increases in officer compensation can also be explained as efficient. Some firms may lack resources to attract the best managerial talent. New wealth provided by exemption could allow firms to obtain more skilled managers or better incentivize those they have.

As an alternative, I look to the higher-education data, which include some variables that could be understood as the extent to which institutions serve the public. In particular, I focus on enrollment and tuition. Are property-tax subsidies passed through to students?

Table Seven: Effect of Property Tax on Higher Education

VARIABLES	(1)	(2)	(3)	(4)	(5)
Log Tax Rate	0.0737**	0.0596**	0.0191	0.130***	0.0584
	(0.0371)	(0.0303)	(0.0267)	(0.0482)	(0.0403)
Log FTE Count			0.538***		
			(0.0392)		
Log Liabilities	0.0148	0.0284	0.0264*	0.0473	0.0428*
	(0.0260)	(0.0221)	(0.0160)	(0.0321)	(0.0245)
Log Tot Revenues	0.338***	0.304***	0.220***		
	(0.0507)	(0.0502)	(0.0436)		
Log Tot Assets	0.212***	0.267***	0.196***	0.455***	0.00590
	(0.0443)	(0.0486)	(0.0282)	(0.0416)	(0.0293)
Log Undergrad Share	0.0733	-0.0884	-0.121*	-0.171***	-0.192**
	(0.0952)	(0.0598)	(0.0647)	(0.0595)	(0.0818)
Log Graduation Rate	-0.0142	-0.00818	0.00519	0.0175	0.0483*
	(0.0181)	(0.0162)	(0.0113)	(0.0243)	(0.0275)
Has Hospital?	0.0158	0.0335	0.0676**	0.0639**	0.000537
	(0.0208)	(0.0255)	(0.0331)	(0.0251)	(0.0204)
Observations	2,888	2,881	2,881	2,878	2,878

Notes: Coefficients reported with standard errors clustered by firm in (parentheses). Firms with zero combined land and buildings expense omitted. Column One outcome variable is log full-time equivalent students enrolled. For Columns Two and Three the outcome variable is the compensation portion of total education and general expenses. Column Four outcome is net tuition and fees. Column Five outcome variable is tuition and fees per FTE enrolled. All columns estimated using panel GEE, and include controls for state population, population share over 64 and under 19, GDP, and median income, as well as calendar-year fixed effects and state by calendar year trends. *: statistically significant at the 10% level **: statistically significant at the 5% level. ***: statistically significant at the 1% level.

Evidence suggests that schools primarily use exemption to expand enrollment. As Table Seven Column One reports, a one-percent increase in tax rates is correlated with .074-percent higher enrollment among firms that report any land or building expenses. Total net tuition increases at a somewhat higher rate, with a coefficient of .13 (Column Four), though there is no significant increase in tuition per full-time equivalent student (Column Five). Similarly, although colleges' total compensation is increasing with tax rates, this difference disappears when controlling for enrollment (Column Three).

Exemption therefore appears to allow colleges to add students without adding to per-student costs, perhaps through a liquidity effect. Studies find economies of scope in undergraduate education (Koshal & Koshal 1999; Cohen, Rhine & Santos 1989). However, expanding enrollment puts downward pressure on the quality of admitted students, an important maximand for many institutions (Ehrenberg 2004). Tax exemption may provide additional resources institutions can use to compete for high-quality students while expanding enrollment. Notably, though, schools have not tended to use other new resources, such as endowment growth, to expand enrollment (Brown et al. 2014, Smith 2015). Alternately, schools in low-tax jurisdictions may refrain from cost-effective expansion because of fixed costs of expansion, such as the expense of building additional dormitory and classroom space. Exemption may loosen this constraint by reducing the up-front costs needed to expand.

There is, though, also some evidence of the free cash flow phenomenon at colleges and universities. Other researchers suggest that administrative staffing can be a symptom of various forms of managerial slack. For example, top administrators may add additional layers of bureaucracy as a form of empire building or mission creep (Bowen 1980). Presidents could see mid-tier administrators as a way to counter-balance and outflank faculty and preserve presidential power (Ginsberg 2011:39). In my data, a one-percent increase in tax rates correlates with a .17-percent increase in the number of university administrators per 100 FTE students. At the same time, I find no significant effects on average faculty salaries, with a coefficient close to zero.

6.0 Conclusion

I have offered an initial glimpse into the workings of the property tax exemption for charitable organizations. As with any first paper in a literature, the results tend to be complicating, not simplifying. While I find suggestive evidence that exemption may relieve liquidity constraints on expansion in higher education, more work is needed to understand fully the effects of exemption on the amount, quality, and location of charitable output. Whatever its role in delivering a subsidy, I also show new evidence that exemption could be a corrective to distortions of the income-tax system, and that this benefit depends on the exact scope of exemption.

None of these arguments require that the exemption be delivered in its current form. Exemption places a disproportionate burden on charity-dense municipalities (Calabrese & Caroll 2012), among other possible critiques. For instance, many commentators object to the lack of oversight that they suggest comes with the "off-budget" nature of exemption; Brooks, Galle & Maher (2018) offer counter-arguments in favor of off-budget policy-making in some cases. Governments that found these criticisms persuasive could replicate most of the impact I measure through other mechanisms. If the main accomplishment of exemption is the liquidity it provides to land-intensive charities, that function could be replaced with expanded subsidized lending programs. Removing the income-tax distortion on charitable property use could be remedied with refundable depreciation deductions, or perhaps by repeal of accelerated depreciation. Since depreciation also likely impacts the purchasing

decisions of other tax-indifferent parties, such as governments, the latter alternative likely deserves more consideration than it has received to date.

In addition to shedding light on exemption, my finding also offer some insight into the behavior of nonprofit managers. Like other humans, nonprofit managers make some use of opportunities to serve their own interests, capturing in several ways a portion of the benefit exemption offers their firm. Perhaps most notably, I find strong evidence that managers are not budget maximizers, but instead have something of a target budget, such that resource shocks allow the manager to relax her efforts to pursue revenues she finds personally costly. In some cases, though, this self-serving behavior again is potentially second-best efficient, as in the case of fundraising, where a faithful agent maximizing the firm's outcomes would create negative externalities for other firms.

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Appendix

Galle & Safak (2019) describe the assembly of a nationwide dataset of municipal-level property tax rates. This Appendix summarizes that process.

1. Overview of U.S. Property Taxes

It is useful first to describe the structure of property taxing authority in the United States. Readers are also urged to consult the Lincoln Institute of Land Policy's Significant Features of the Property Tax, from which most of the information here is derived. Annual ad valorem taxes on residential and commercial property are a staple of every American city and town. In states other than Minnesota, a tax bill is computed from two components, the tax or "millage" rate and the assessed value of the property. States vary in how properties are assessed, and in many jurisdictions the taxable value of the property is less than its true economic value. Some states tax only a set fraction of assessed value, while others impose legal limits on the extent to which taxable value can increase over the prior year.

Property taxes are most common in municipal government, but they involve many other state actors as well. In general, rules and regulations for how taxes will be assessed and collected are set at the state level, but often these assessments and collections are handled by individual taxing authorities. Many states themselves also collect ad valorem property taxes. The majority further authorize property taxes for one or more forms of special-purpose governments, such as school districts, water and sewer districts, and so on. School districts are by far the most common. Special-purpose districts can but often do not nest within higher-tier local governments such as municipalities and counties. Municipalities can also cross county borders.

Different types of property are sometimes taxed in different ways. In a handful of jurisdictions, residential and commercial real property are taxed at different rates. Most states tax "business personal property," or business equipment, at the same rate as real property, but some do not tax personal property at all. The District of Columbia has a progressive property tax in which high-value parcels are taxed at higher rates. Many other locations reach a similar result for residential property by granting a "homestead" exemption in which the first $100,000 or so of a residential property's value is untaxed.

2. Tax Rate Data Assembly

Galle & Safak (2019) set out to create a comprehensive, transparent, and free source of property-tax rate data. There is no public existing single source for nationwide property tax rates. One private vendor sells parcel-level tax rates, with coverage through approximately 2009, but it does not disclose how these rates are calculated.

We began by hand-collecting reported rates for every available local government in the U.S. for every year available. Many of these reports are available for download via the Lincoln Institute of Land Policy web site; others were collected through open records requests. We also are grateful for assistance from the South Carolina and Texas

Associations of Counties for additional data. For most older data, we are obliged to extract values from pdf or scanned documents using Python scripting.

Recall that in order to compute the total property tax imposed on a given parcel the researcher must aggregate the taxes imposed by as many as five or more distinct governments. This requires that tax rate data be reported for each of the component taxing authorities, and that the authorities then be aggregated at the parcel level using geocoding or similar techniques.

An obstacle to this approach is that many jurisdictions do not report tax rates at the taxing-authority level, but instead aggregate up to the mean rate imposed across a municipality or county. Typically, these aggregate values are reported as "averages," but states vary in whether the "average" is truly the mean rate imposed on parcels in the municipality, or instead is simply the mean of the total rates. That is, suppose there are two school districts in a city, one with a 1% rate covering one-quarter the properties and one with a 2% rate covering the other three quarters. Some states apparently would report the "average" municipal rate as 1.5%, while others would report it as 1.75%. Public data do not typically disclose which method of aggregation the state chooses.

In this Paper, we utilize commercial property rates aggregated to the municipal level, rather than (for example) the rate that would apply at the mailing address appearing on the charity's tax return. For one, as just noted, some localities do not report rates at this level of precision. Average municipal rates may also better reflect the marginal cost of additional property. Assuming that a charity were to add another parcel to its existing stock, that parcel could potentially be located at some distance from the organization's mailbox.

Following MCFE (2012), when we aggregate to the municipal level, we report the highest combined tax rate in the municipality. Where possible, we compute this maximum rate by aggregating through geocoding all geographically possible combinations of rates and finding the parcel with the highest combined rate. In some cases, this maximum is the aggregate of sub-municipal governments. For municipalities that span multiple counties, we either again geocode and find the maximum or, where that is infeasible, take the greater of the applicable publicly reported county-average rates. In a few cities, we have neither of these and can report only the publicly reported "average" tax rate for that municipality. Our results are robust to omitting observations from these locations.

Nominal tax rates are not necessarily comparable across jurisdictions because some jurisdictions do not tax 100% of the assessed value of each parcel. To generate apples-to-apples comparisons, we additionally assemble a panel of information regarding the share of assessed value subject to tax for each class of property in each state and each year of our data. We then multiply each observed tax rate by this share to generate what we term the "effective tax rate." For the District of Columbia, which uses a two-step progressive rate structure for commercial property, we use the lower rate.[11]

[11] We use the lower rate because in all observed years the higher rate kicks in at a value—$20 million dollars in most years—well in excess of the mean value of property reported in our data.

California and Oregon present special problems in this regard. California's infamous Prop. 13 and its amendments cap increases in the taxable value of both residential and commercial properties at no more than 1% annually; Oregon's limit is 3%. Property that is sold or substantially modified becomes taxable at its present value. To compute the effective tax rate on any given parcel, one would have to know its purchase and sale history as well as the history of value fluctuations since the Prop. 13 reference year, 1976. Several other states have similar limitations, but these are either restricted to residential property or have caps sufficiently large (ten percent in Arizona, Arkansas and Maryland, five percent in Michigan) that they are not effectively binding over long periods.

We address the California/Oregon problem several different ways. First, and most simply, we run regressions without California and Oregon, but this is obviously a large loss of data. Alternately, we treat both states as 100% taxable, on the theory that the marginal rate applicable to newly purchased property will be imposed on the full present value of the new acquisition. However, it could be argued that the expected rate of tax on new property will be less than the nominal amount, because over time the newly-acquired property will appreciate at greater than 1% annually. We therefore compute an *expected* marginal tax rate, calculated by imputing a projected appreciation rate from two lags and one lead of actual commercial property values in each California municipality, and amortizing this growth and the resulting tax over a forty-year expected life span. In a fourth variation, we treat taxable value as the fraction (1976 Value) * (1 + ((Observation Year – 1976) / 100)) / (Observation Year Value), where value inputs for each year are the average commercial property value for that city.[12] The assumption here, which we verify empirically, is that average municipal property appreciation has exceeded 1% annually since 1976.[13]

[12] Obviously, for Oregon we substitute 3% and the appropriate reference year, 1996. We also multiply 1996 values by 90%, as required by the Oregon statute.

[13] In Oregon we employ the lesser of this fraction or actual appreciation.