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RESEARCH ARTICLE

Effects of vacation properties on local education budgets

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Abstract: Residents of school districts with large percentages of vacation properties have the opportunity to export a portion of their school taxes onto the owners of those vacation properties. Those property owners are unlikely to consume educational services or have the opportunity to vote against local school taxes. Previous studies address exportation of taxes onto vacation property owners and the effects on local government budgets generally but not on education finances specifically. This study connects research on rates of vacation properties with that on local education finances by using data from the state of Georgia in 2010 and weighted least squares regression analysis to show that high percentages of vacation properties do indeed result in larger local school expenditures.

Keywords: education finance, property taxes, local government

1. Introduction

The presence of vacation homes in a community creates an opportunity for full-time residents to export a portion of their local taxes. As residents choose to increase the tax rates in their communities, a portion of the tax burden falls upon vacation property owners who typically neither vote in local elections nor consume many local government services, particularly education services. Owners of vacation properties are certainly interested in reliable police and fire departments to protect their investments, but they are unlikely to consume local education services. Therefore, year-round residents have the opportunity to increase the education services available to their own children at the expense of taxpayers who will not use the services but lack the opportunity to vote against any increases in taxation or expenditures.

Any effect that the presence of vacation properties has on the level of school revenues is likely moderated by both alternative vacation destinations in the market for second homes and voters' preferences for lower taxes, however. A community with large numbers of vacation properties may

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PUBLIC INTEREST STATEMENT

Do vacation properties swell the budgets of their school districts? As with commercial and industrial properties, the existence of vacation homes in a community presents an opportunity for year-round residents to spread the cost of public education across taxpayers who do not vote and will not use education services. Using data from the state of Georgia in the United States, I find that the more vacation properties a school district has, the larger its budgets will be. Those larger budgets, however, do not necessarily mean that the districts will hire more teachers than other districts with fewer vacation properties.

indeed be tempted to raise taxes to improve education programs. But while the owners of vacation properties may not be able to vote in the polls, they are able to "vote with their feet" (Tiebout, 1956) and spend their vacations elsewhere.

The counties of Rabun, Greene, and Putnam are the three districts in Georgia with the highest local education revenues per pupil in the state. Rabun holds the top spot, with local education revenue totaling more than $10,700 per student in the 2010–2011 school year. Rabun has a small but growing population and a picturesque rural setting. In fact, the entire county is located within Black Rock Mountain State Park and less than two hours from the city of Atlanta, which may explain why it happens to have the state's largest percentage of vacation properties. Greene and Putnam have percentages of vacation properties that are smaller than Rabun's but still fall into the top decile of the state. They too are an easy drive from Atlanta and have numerous opportunities for outdoor recreation and scenic tourism.

These few cases suggest that counties may indeed take advantage of the tax-exporting opportunities that vacation properties provide. This paper investigates that issue further through a review of relevant literature and a quantitative analysis of data from all 159 counties in the state of Georgia. The next section includes a discussion of previous research. Following that is an explanation of methods for this study, a description of the analysis and results, and implications for policy.

2. Previous research

This review of literature is divided into two parts, reflecting the fact that local education budgets and vacation property rates fall into separate areas of research. The first part describes major studies of the effects property types and local income levels have on education budgets. Overall, this literature shows that education budgets do vary with the types of property found in districts. The second addresses research on the effects that vacation properties have on local governments generally. These studies find that local governments typically take advantage of the tax-exporting opportunities provided by vacation properties. The purpose of this study is to link these two areas of research by connecting vacation properties to local education budgets.

The most prominent work on how property types affect local education finances goes back to the 1970s and 1980s. Ladd (1975) used data from the Boston metropolitan area to show that school spending changes according to the percentages of the tax base that are commercial, industrial, or residential. In her analysis, commercial properties had a greater influence on education spending than the other two types of properties. The presence of non-residential properties provided an opportunity, Ladd reasoned, for the median voter to select levels of education services at a reduced cost to themselves because the full cost of educating each pupil would be spread out over industrial and commercial properties that would not consume any education services yet could not vote against any increases. Ladd pointed out, however, that industry enjoys more mobility than commercial activities, so any drastic increase in education taxes will be limited by the possibility that such businesses will leave the community. Commercial properties, on the other hand, are less mobile as they must be located near their target customers.

A more recent study in Norway supports Ladd's conclusions. Hægeland, Raaum, and Salvanes (2012) examined the effects that hydroelectric stations, facilities that are exceptionally immobile, have on education budgets and student outcomes. The authors found that the presence of such resources in a school district caused increases in education expenditures which in turn were associated with increases in academic outcomes.

In response to such studies connecting the mix of property types to education resources, equity-minded education finance reformers pushed for states, rather than localities, to tax industrial properties and spread the revenue across districts. However, a second study by Ladd (1976) and a later study by Nelson (1983) argued that the redistribution of taxes on industry would do little to improve equity in education budgets because communities with industrial development had a combination

of price effects and wealth effects influencing education revenues; moving the taxes on industry elsewhere could adversely affect school systems.

New York State implemented a tax-relief policy in hopes of stabilizing and equalizing education budgets. In his analysis of the program's impact, Rockoff (2010) found that homeowners responded to the lower marginal cost of education spending by increasing, rather than decreasing, their local education budgets and property taxes. He notes that even though renters and the owners of non-residential properties often objected to the increases, homeowners wielded more influence in local government.

The effect of residents' income on education finances also receives a lot of attention, with many researchers arguing that income plays a smaller role than most policy-makers seem to think. Nelson (1984), for example, showed that in Wisconsin, families living in poverty are more widely dispersed across communities of varying wealth than most researchers assume. Denzau and Grier (1984) showed that income was historically one of the primary determinants of education spending but policy reforms have weakened the relationship. Hoxby (1998) also showed that the impact of income may be overstated by many people. Her research shows that income differences play a declining role in determining differences in per-pupil spending compared to what they once did.

So far, research on the effects of vacation properties in a given district has examined local government finances generally and not education budgets specifically. On average, they find that vacation properties are associated with local government budgets that are larger than if the properties were owned by year-round residents. Fritz (1982), for example, found that high percentages of vacation homes in Vermont increase local property tax rates, even to the point of increasing the burden on year-round residents beyond that found in other communities. Hadsell and Colarusso (2009), in a study of communities in New York state, found a similar effect in rural areas but not in more densely populated towns, perhaps because of the greater presence of commercial and industrial properties in the towns.

Studies that focus on local government spending rather than tax rates also report an increase associated with vacation properties. Anderson's (2006) study in Minnesota found that an increase in vacation properties within a community leads to an increase in local government spending. Anderson's later (2008) work found that the impact of vacation properties on government spending depends in part on the wealth of the year-round residents. Poorer communities, he reported, increased their local government spending to a greater degree than wealthy communities with similar proportions of vacation properties.

Another strand of research explores the limits to the exportation of taxes. Wildasin (1987), for example, argued that in most situations of tax exporting, the temptation to do so is countered by the fact that residents will also be increasing taxes on themselves. Furthermore, Johnson and Walsh (2007, 2013) show that tax policies probably have a greater impact on vacation home decisions than that the vacation homes have on tax policy decisions. In other words, an excessive tax burden on the owners of vacation property owners will drive away prospective buyers, particularly if the market for tourism has similar options available nearby. If taxes are kept low, more tourists may be tempted to purchase vacation homes in the area. The more unique and attractive the features of a tourist destination, the more able the local governments will be to squeeze a little more revenue out of vacation property owners (Anderson, 2008). In sum, there is evidence that local government budgets do expand with higher proportions of vacation properties, but that expansion is limited by market forces.

3. Research question and hypothesis

Owners of vacation properties sometimes complain that they must pay a share of taxes that is disproportionate to their consumption of local services. This displacement of costs is especially true of education services. While vacation property owners want police and fire protection to preserve their

property, they typically do not enroll their children (or their renter's children) in schools. Some states go a step further by imposing higher taxes on second homes than they do on primary residences (Saltzman, 2009). The popular homestead exemption is one way that some states and local governments have shifted costs away from year-round residents. Furthermore, the values of seasonal properties are tied more to tourist amenities of the area, such as mountain views and waterfront access, than to government services, giving their owners little incentive to support or care about local public schools (Anderson, 2008).

Do year-round residents of vacation areas take advantage of the opportunity to increase education services beyond what they might otherwise spend? Literature suggests that when communities have the chance to export taxes and increase services, they will do so, at least until income effects and the departure of vacation home buyers prevent such increases. This study proposes the following hypothesis:

> H1: When comparing school districts, those with higher percentages of vacation properties will collect more local revenue per pupil than districts with fewer vacation properties.

Education budgets can be a complicated business, however, and increased dollars may not be the only outcome of vacation properties. Reducing the size of classes has been a particularly popular, and occasionally controversial, method of improving education services for districts that could afford to do so (Hanushek & Rivkin, 1997). Accordingly, this study tests a second hypothesis:

> H2: Among school districts, those with higher percentages of vacation properties will have smaller pupil to teacher ratios.

4. Research design

Because states differ greatly in approaches to education finance, this study conducts a within-state comparison of school districts, as other studies have done (Anderson, 2006; Fritz, 1982; Hadsell & Colarusso, 2009; Hoxby, 1998; Ladd, 1975, 1976; Nelson, 1984). I selected Georgia as the state for study because its school districts rely heavily on local taxes, it has a large number of school districts, and the boundaries of the vast majority of those districts match the boundaries of the county government, for the most part keeping local budget decisions and their relationships with property use well aligned. These criteria are helpful for this study and rarely found in the same state.

Nearly half of Georgia's education funding comes from local revenues, making it more suitable for this research than states which rely more heavily on state funding. Georgia has 159 counties, each of which operates its own public school system with financial support from both the state and federal governments. All 159 districts are represented in the data. Georgia also has 18 smaller autonomous school districts operating separately from the county-run school systems, but these entities are excluded from the data because several of the necessary variables are only available at the county level.

The US Census website provides data on the use of housing, offering a measurement for the main independent variable as well as some control variables discussed later. The independent variable of interest is the percentage of properties in each district that are designated for vacation, seasonal, or occasional use in 2010. The dependent variable for H1 is the local share of the budget for education per pupil within each school district in 2010–2011 in dollars and comes from the Common Core of Data of the National Center for Education Statistics (NCES). The dependent variable for H2 is the pupil–teacher ratio for 2010–2011, also obtained from the NCES. In both the independent and dependent variables, the data from Georgia include wide ranges. The percentage of vacation properties ranges from .3 to 35%. The portion of education revenue per pupil from local sources ranges from $1,745 to $10,705. Student-to-teacher ratios ranged from 9.48 to 17.15.

Three control variables come from the 2010 Census data. To account for senior residents who are unlikely to consume education services yet can vote and are eligible for age-based tax exemptions,

the study uses a control variable of households headed by individuals 65 years old and up. The impact of an elderly population is common in studies of school finance, although any negative effect is likely to be small (Berkman & Plutzer, 2004; Fletcher & Kenny, 2008).To control for any effects of racial or ethnic differences, the study includes a measure of the percent of residents in each county who are white. Third, the study employs a median income variable to account for fiscal capacity of local districts. Bergstrom and Goodman (1973) used data from 10 different states to show that residents' race, income, and age are significantly related to local government expenditures. Denzau and Grier (1984) similarly found evidence that income and race affect local school spending.

Drawing on the work of Ladd (1975), this study also includes control variables for the presence of non-residential properties by including four variables for the percent of school taxes coming from industrial, commercial, agricultural, and utility properties. As Ladd found, such properties affect the choices faced by the median voter by presenting opportunities to export taxes, much the same as vacation properties as posited in the hypothesis. Data for these variables come from the Department of Revenue of the State of Georgia. To control for the costs of educating students who tend to be more difficult to teach, the study includes variables of the percent of students who have individualized education programs (IEP), the agreed-to accommodations by the district for students found to have disabilities affecting their learning, as well as the percentage receiving free or reduced lunch at school (often referred to as FRL), a common measure of poverty among school children.

The decisions faced by the median voter are also influenced by opportunities for funding by other levels of government. To account for state funding policies, the study includes a control variable that measures the funding per pupil that comes from the state. Another does the same for federal funding. All four of these control variables come from the NCES and are from the 2010–2011 school year. Finally, because there may be economies of scale related to the number of students attending a district, the analysis includes a variable reflecting the total number of students (across all grades and ages) attending schools in the district, also from the NCES (Table 1).

The study uses weighted least squares linear regression with vacation properties as the main independent variable and local education revenue as the dependent variable. A second model tests whether vacation properties have an effect on pupil–teacher ratios. Weighting by enrollment allows the model to account for economies of scale that may exist as a result of variation in district size.

Table 1. Descriptions of district-level variables in this study

Variable	*n*	Mean	Min.	Max.	Source
Local revenue per pupil	158	4119.15	1,745	10,705	NCES
Student–teacher ratio	158	14.74	9.48	17.15	NCES
Percent vacation properties	158	4.45	.3	35	US Census
Median income (in $1000s)	158	40.93	23	88	US Census
Percent households 65+	158	14.99	4	31	US Census
Percent households white	158	63.17	15	96	US Census
Percent revenue: Industrial	158	5.97	0	40.29	GA Dept. of Revenue
Percent revenue: Commercial	158	14.98	2.79	40.21	GA Dept. of Revenue
Percent revenue: Agricultural	158	8.16	0	33.29	GA Dept. of Revenue
Percent revenue: Utilities	158	5.87	.80	70.80	GA Dept. of Revenue
Percent students with IEPs	158	11.21	5.80	17.10	NCES
State revenue per pupil	158	4986.05	2,261	8,191	NCES
Federal revenue per pupil	158	1711.93	611	4,286	NCES
Enrollment	158	9729.12	218	160,744	NCES

Source: Table created by author.

5. Results

Results support the hypothesis that vacation properties have a positive effect on local education budgets when controlling for other factors. A 1% increase in vacation properties is associated with an average increase in local per-pupil spending of about $78, controlling for other factors. Ladd's work in 1975 similarly showed that residents of a locality will choose more expensive services when some of the burden can be shifted onto commercial and industrial entities that do not vote; this study adds vacation properties to that list. In fact, the coefficient for vacation properties is substantially higher (and more statistically significant) than any of the other property-related independent variables (Table 2).

With expanded budgets, districts have the opportunity to hire more personnel, thereby reducing class sizes and the student–teacher ratio. The second model tests the effects of vacation homes and other variables on class student–teacher ratio and finds evidence that the ratio shrinks as vacation

Table 2. WLS regression analysis for local education revenue per pupil and student–teacher ratio

Variable	Local per-pupil revenue	Student–teacher ratio
Percent vacation properties	77.680***	−.032
	(20.544)	(.019)
Median household income (in thousands of dollars)	22.160	−.016
	(12.023)	(.011)
Percent white residents	−14.245	−.000
	(7.859)	(.007)
Percent residents 65 and older	114.010**	−.112**
	(36.275)	(.035)
Percent of revenue from commercial properties	30.911	−.042**
	(17.160)	(.014)
Percent of revenue from industrial properties	12.603	−.014
	(14.535)	(.014)
Percent of revenue from utility properties	30.515**	−.011
	(11.455)	(.011)
Percent of revenue from agricultural properties	35.118	−.020
	(19.860)	(.018)
Percent of students with IEPs	120.062**	−.106**
	(39.738)	(.038)
Percent of students on FRL	−14.020	−.003
	(12.023)	(.011)
State revenue per pupil ($)	−.967***	.000
	(.126)	(.000)
Federal revenue per pupil ($)	−.004	−.001***
	(.238)	(.000)
Constant	5487.489***	20.582***
	(1687.051)	(1.527)
Adjusted R^2	.602	.387
n	159	159

*Significant at the .05 level.

**Significant at the .01 level.

***Significant at the .001 level.

Source: Table created by author.

homes increase in proportion, but the relationship falls short of statistical significance. That issue aside, the coefficient suggests that when the percentage of vacation homes increases by 30, the number of students per teacher will decrease by one. Among the other property-related variables in the model, only the commercial category exceeds vacation properties in the magnitude of the coefficient or statistical significance.

In both models, the control variables for both the population of senior citizens and the percentage of students with special education services have consistent and significant effects on the dependent variables. Having more elderly residents is associated with substantial increases in local education revenue, as is the percentage of students with IEPs. Predictably, increases in these variables tend to decrease the number of students per teacher in the district, as seen in the second model. While it is often assumed that older voters will not support education spending, there is evidence that they in fact are quite dedicated to public schools, a notion that finds strong support in these results. As for the IEP variable, while it is no surprise that special education programs put greater demands on school budgets, what is noteworthy here is that the effect is so pronounced on the local portion of the budget. Communities with disproportionately high rates of students with learning disabilities are raising revenue among their own taxpayers to cover the costs, it would seem, over and above whatever grants they might be getting from state and federal sources for those purposes.

A few other interesting patterns appear in the results table. While commercial properties have a powerful impact on lowering the student–teacher ratio, they have no significant effect on the local revenue for education. Utility properties, on the other hand, are associated with more local education revenue, but have no significant impact on student–teacher ratios. Similarly, as state revenues in a district increase, the local share decreases, but the shift has no effect on student–teacher ratios, and as federal dollars increase the local share does not move but the student–teacher ratio shrinks. On those counts, one could presume that grants from the state and federal government are earmarked for different purposes, the former for administrative costs and the latter for instructional, for example. As for why commercial properties affect only ratios and utilities affect only budgets, the causal mechanism is more difficult to discern. Perhaps commercial properties are a mark of communities with more personal interaction, which translates into more teachers being hired, while utilities represent a source of revenue unaccompanied by incentives for hiring educators. Whatever the cause, the numbers go beyond the scope of this study but offer potential for future research.

6. Discussion and conclusion

Confirmation of the first hypothesis that vacation properties increase school budgets is unsurprising, given the literature confirming that voters frequently take advantage of opportunities for tax exporting. Tests of the second hypothesis were inconclusive in that results did not meet conventional standards of statistical significance, but suggest that with a larger sample one might find that vacation properties lead districts to invest more heavily in their teaching forces. Taken together, the two models suggest that while the opportunity presented by vacation properties to export taxes inflates school budgets, the additional funds are not being spent exclusively on decreasing class size. Instead, those additional funds may be going to additional services, facility improvements, or salaries for teachers or administrators. Further research might explore how this money is usually spent.

There are several limitations to this study. The first is the use of a single state as the sole source of data. While the state is well suited for this study, Georgia's experience may not be applicable to other settings with different political cultures and economic conditions, but, for those same reasons, it would not be an improvement to lump districts from different states together unless an adequate way of controlling for the many differences could be implemented. Nearly all studies of school funding examine only one state at a time for this reason. A second limitation is the fact that in addition to Georgia's 159 county-based school districts, there are 18 autonomous school districts that are separate from the county systems. Their absence from the study may introduce some bias to the findings. If better data could be found in the future, a more precise study could improve upon the work presented here.

This study has implications for the issue of homestead exemptions and efforts for district resource equalization. Anderson's (2011) study of Minnesota found that local government budgets are sufficiently elastic that when homestead exemptions offered reductions in tax burdens, communities responded with a proportional increase in taxes leaving tax payments essentially the same. Currently, Georgia's state and county governments allow only relatively small tax exemptions for primary residences. Counties are free to offer their own opportunities for exemptions, but the state option is a $2000 reduction in assessed value for most homeowners. Certain qualifications such as age, income, and veteran status qualify residents for much higher exemptions, some as high as $50,000, but overall the exemptions by Georgia's statutes have minimal impact on budgets and consumer choices (Saltzman, 2009). By contrast, in neighboring South Carolina, vacation and rental properties are assessed at rates 50% higher than primary homes. If states are considering changes to property tax policy, they should include in their calculations the small role vacation properties may already be playing in tax revenues.

This study also has implications for questions of educational equity and tax fairness. States that wish to find ways to distribute educational services equitably should pay attention to the revenue local districts may be obtaining from vacation homes in addition to industrial and commercial properties. Local districts, particularly school officials and parents of students, should be aware that differences in vacation properties will translate into differences in school funds. Policies that encourage vacation properties can be a modest but effective opportunity for districts struggling to fund schools, provided those districts include settings and locations desirable to vacationers. At the same time, districts that do not possess such settings will fall behind in their school funding, or will need to tax their own residents all the more, something state government would do well to notice.

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