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NUMBER OF TAXING UNITS AND PROPERTY TAX COLLECTIONS

*David L. Chicoine and Norman Walzer**

Since the passage of Proposition 13 in California in 1978, renewed interest, especially at the state level, in imposing limits on property taxes has been evident. Citizen groups, business leaders, and reformers have prevailed upon legislators to limit property tax increases imposed by local governments. The result has been policies that limit property tax rates, growth in assessed valuations, or property tax extensions.

Local officials have resisted these limits on the grounds that inflation is driving the costs of providing services to record heights at the same time that state and federal governments are mandating the provision of new services. Also, the proposed cutbacks in federal aid and consolidation of grants into a smaller number of state administered programs have heightened the anxieties of local officials. The poor economic conditions in many states have caused state government financial assistance to either decline in absolute terms or to increase less rapidly than the costs of local public services.

The shrinking fiscal resources and the growing costs of providing services combined with a set of more restrictive property tax rate limitations leads local officials to find new ways of raising revenues. User charges are one alternative but this method of finance has limitations for most services other than those commonly operated as enterprises (e.g., water, sanitary sewer, solid waste, parking).

As budgets become tight without a concomitant decline in service demands, one option which has been available is to create a new governmental unit with additional taxing and debt capacity. The process of establishing a new government is generally not very complicated and the boundaries of the new jurisdiction can be arranged to meet the needs of a local constituency or to form a constituency demanding the additional services.

To be sure, there are many reasons for the formation of local governments in addition to the circumventing of local property tax rate or debt limits. In fact, some of the reasons may involve a lack of suitable alternatives for providing services to residents outside municipalities.

Although much has been written about the policies and economics of different governmental arrangements for providing local services, there does not appear to be much research focusing on the ultimate effect of the multiplicity of governments on property taxes paid by residents. Since the late 1970s, the property tax has become somewhat of a rallying point for those protesting the size of government. Taxpayers have even traded local control of property taxes in favor of greater dependence on state governments by requesting stricter property tax limitations.

This paper expands the property tax literature by examining the relationship between number of local taxing units and property tax collections. The importance of this issue arises from the fact that if, as is commonly argued, tax rate

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limitations contribute to a growth in the number of local governments, there should be an understanding of the impact on property tax collections (e.g., see Cape, et al. [6, p. 4]). Is it possible, for instance, for tighter rate limits to ultimately lead to higher property taxes?

Review of Previous Research

Studies of governmental structure, fragmentation, and numbers of governments have appeared in the public finance literature for many years. The importance of arrangements for providing local public services has been debated, for the most part, from two points of view. Centralists and reformers have claimed that small governments lead to a complex, duplicative, and overlapping system causing higher costs of service.¹ The property tax base is fragmented with many local governments being too small to operate efficiently or effectively. Particular concern arises about coordination of services, and examples are cited where citizens do not know which governmental agency to call when a need arises. A fragmented public choice system with a plethora of local governments is argued to impede the efficient determination of local public service demands by restricting log rolling and allowing those with intense preferences an undue influence in establishing public service levels.

The alternative position taken by those associated with the "public choice" school is that a wide array of governments makes each unit more competitive in an attempt to protect its tax base and preserve its clientele.² The claim is that large multi-purpose governments behave as monopolies with higher tax prices and lower service levels. Many competing governments are argued to be a necessary condition for local public sector efficiency by creating an environment where property tax increases without corresponding service increases cause residents to move to other more efficient jurisdictions [8, 15].

Direct attention is placed on the importance of institutional structure in public finance in the arguments that certain methods of financing tend to obscure the true cost and thus the tax price of public services leading to higher spending than under more accurate cost perceptions. This approach, termed "fiscal illusion" has been applied to the analysis of the effect of revenue structure on local budget outcomes among like units of local governments [14].³ Adapting the "fiscal illusion" hypothesis to local government structure leads to the argument that the presence of numerous overlapping governments obscures the perceptions of voters who consequently underestimate the tax price of public services and support higher service levels than if prices were accurately perceived.

¹ Examples of this position abound in the economics and political science literature. Two illustrations include [1, 9].

² Early examples of this point of view can be found in [13, 4].

³ There is some difficulty with Wagner's [14] empirical findings in light of other research reported in the literature. If, because of fiscal illusion, too low a tax price is perceived by voters then one might expect a larger than optimal quantity of services to be demanded. However, for total expenditures to be higher under these circumstances would seem to imply that the price elasticity of local service demand is greater than unity. However, this is generally not the findings of other researchers such as Sjoquist or Bergstrom and Goodman who, independently reported price elasticities of local services of -.163 and -.23, respectively. With an inelastic demand an increase in quantity demanded would cause total expenditures to go down. See [12] and [3].

While empirical studies have devoted considerable effort to investigating the relationship between governmental structure and spending patterns, relatively little attention has been paid to the impact on revenue patterns (e.g., see Wagner and Weber [15] and Sjoquist [12]).⁴ In particular, the effects of local taxing limits and the possibility that additional governments will be created to increase the aggregate local government taxing and borrowing capacity resulting in higher property taxes has received little attention.

In this paper, the impact of number of governments on the property taxes collected by local governments is empirically investigated using data on 101 Illinois counties (excluding Cook) collected from the 1977 Census of Governments. Specifically, property taxes collected by all governments within a county have been aggregated and regressed on county socio-economic characteristics and government structure.⁵

One thesis of this study is that complex governmental structures with fragmented, overlapping service delivery systems create a situation in which residents are less able to identify, and hold accountable, local public officials. The fragmented structure weakens the accountability linkage between voters and officials putting officials in a better position to increase property taxes. Also, small governments and single-function districts may not be able to take advantage of economies of scale and may be more susceptible to special interests adding further to the potential for higher property tax collections with more complex service arrangements. The intent here is not to derive policy prescriptions on the optimal organization for meeting local public service demands, but rather to simply determine the effect of number of governments on property tax collections.

Models To Be Tested

To determine the effect of alternate governmental structures on property tax collections, two property tax formulations are used. First is per capita property taxes collected by all governments in a county. This measure provides the most comprehensive picture of property taxes collected but is not adjusted for wealth or assessment practices within the county. To adjust for differences in wealth, property taxes collected as a percentage of personal income in a county (tax effort) is used as an alternate dependent variable.

The effects of number of governments on property taxes, using each dependent variable, were estimated by the following OLS regression equation:

$$(1) \quad p_{TAX} = a + \sum_{i=1}^n b_i x_i + u$$

Where:

- p_{TAX} = per capita property tax collections or tax effort,
- x_1 = per capita income,
- x_2 = per capita intergovernmental aid,

⁴ Notable exceptions are [5, 2].

⁵ Aggregating to the county level is virtually the only method of gathering the data so that overlapping governments are contained within one unit of observation. While this method is commonly used in the empirical literature, it involves the assumption that a county is homogeneous with respect to population characteristics, governmental structure, and property tax collection.

- x_3 = per capita expenditures for public services,
- x_4 = percent of population in public elementary and secondary schools,
- x_5 = percent of population 65 years of age or older,
- x_6 = percent manufacturing employment, and
- x_7 = number of governments.

Per capita income is used to account for differences among counties in ability to pay. There are two reasons why income level is an important positive determinant of property tax collections. First is the fact that wealthier residents find it easier to pay taxes and may be more willing to pay for more or better services. Second is the fact that the deductibility of property taxes in determining federal income tax liability reduces the effective tax price of services for wealthy residents causing higher collections. The general underassessment of higher valued homes reduces further the tax price of services for high income residents.

Per capita intergovernmental aid is included as a determinant of property taxes because it represents an alternative revenue source. Local officials able to obtain outside funding for public services are in a much better position to either reduce property tax rates or slow the rate of increase. Interviews with local officials conducted by the authors have revealed wide differences in attitudes regarding intergovernmental support and its use.

Per capita public expenditures adjust for differences among counties in the amount and quality of services provided. The rationale is that higher expenditures mean, on average, better quality or additional services. Presumably, the additional services present greater needs for property taxes and a positive association between level of public spending and property tax collections is expected.

The number enrolled in public elementary and secondary schools, as a percent of population, is included because elementary and secondary schools are the largest users of property taxes in Illinois. [7]. It follows, therefore, that counties in which a larger share of the population is enrolled in public elementary and secondary schools will have greater need for property taxes, *ceteris paribus*.

Elderly residents are commonly associated with resistance to property taxes because much of the wealth of this age group is held as housing. Thus, relatively low incomes and large homes create a climate of resistance to bond issues or property tax referenda. The percentage of elderly in the population is therefore expected to be negatively associated with property tax levels.

The elderly have another motive for resisting property taxes. Elderly residents may desire fewer public services because of less need. If this is true, it could explain a negative association between this group and property tax collections. However, since per capita public spending is included in the equation already, the interrelationship between aged and spending can be examined separately from the relationship between elderly and property tax collections.

Percentage employed in manufacturing is an attempt to classify counties by type of tax base. Differences in counties in tax base can have an important effect on taxes collected. Rural counties, for instance, will have a greater share of real property in agriculture which is subject to preferential assessment. With existing tax rate limits, rural counties may have a lower property taxing capacity. Concomitantly, counties containing large industrial firms can collect large amounts of property taxes with relatively low tax rates. Unfortunately, Illinois did not collect information on the distribution of property by type in 1977 so a proxy variable

must be used. Percentage employed in manufacturing is one attempt to adjust for differences in tax base but it should be viewed as an imprecise measure.

Number of governments per 10,000 residents is included to determine the effects of different arrangements for providing services on property tax collections. There are two reasons why a larger number of taxing units may lead to higher property taxes. First is the question of economies of scale. Theoretically, it has been argued that small governments are unable to provide *equivalent services* at the same cost as larger governments [10]. The empirical literature is not consistent on this point, but one of the main problems has been the inability to control for differences in the quality and amount of service provided (e.g., see Fox [11]). With property taxes as the residual revenue source of local governments, higher costs would lead to higher property taxes, other things being equal.

A second reason for expecting a positive relationship between number of taxing units and property tax collections builds from the "fiscal illusion" hypothesis. With more complex governmental environments the costs of information and participation increases and it is harder for residents to determine which government is responsible for tax hikes. The structural confusion encumbers accurate perceptions of tax costs. Thus, the pressure to keep property taxes low may be less when more governments are involved. This variable is measured by the number of taxing units per 10,000 residents.

Regression Results

The results of the regression analyses are provided in Tables 1 and 2. Two measures of property tax collections have been used. First is the per capita collections in the county for all governments. This measure is not adjusted for relative wealth in the county although per capita income is included as an independent variable. An alternative formulation is property tax effort measured by property taxes as a percentage of income. This dependent variable allows a direct adjustment for income in the county and the results of this model are reported in Table 2. Per capita income was excluded as an independent variable from this model formulation.

Overall, the variables, with the exception of percent employed in manufacturing, performed as expected. As shown in Table 1, counties with a higher per capita income collected more property taxes which can be explained either by greater demands for services or less resistance to property taxes because of greater ability to pay and tax advantages.⁶ For this sample, counties which were \$1 per capita above the mean per capita income collected an average of approximately 5 cents per capita more in property taxes. In relative importance as an explanatory variable, income was second only to per capita expenditures.

Counties providing more services, when measured by per capita public expenditures, collect more property taxes. In these counties an additional dollar per person spent above the average represents a higher property tax collection of 32 cents per person. The expenditure variable was the most important in accounting for property tax collections. This is not unexpected since the amount of service provided should be a major factor determining revenues collected.

Per capita intergovernmental aid was also an important determinant and had a negative sign. On average an additional dollar of aid per capita is associated with

⁶ Support for the latter explanation is found when property taxes as a percent of total revenues are used as a dependent variable. A significant positive relationship is found between income level and reliance on property taxes. See [16].

Table 1.: Determinants of Per Capita Property Taxes

<u>Variable</u>	<u>Regression Coefficient†</u>	<u>Beta Coefficient</u>
1975 Per Capita Income	.051* (3.52)	.322
Per Capita Intergovernment Revenue	-.354* (3.36)	-.300
Expenditures Per Capita	.321* (5.36)	.369
Percent in Public Schools	4.945* (2.82)	.181
Percent 65 Years and Older	-7.040* (2.55)	-.230
Percent Employed in Manufacturing	.323 (.670)	.044
No. of Taxing Units per 10,000 Residents	1.920* (2.90)	.250

† t values shown in parentheses

Constant = -149.8

R² adj. = .649

Standard Error of Estimate = \$58.33

F ratio = 27.51

n = 101

*statistically different from zero at five percent

a reduction in per capita property taxes of approximately 35 cents. It would appear that intergovernmental aid was used to provide some property tax relief.

The percentage of residents 65 years and older was the fourth most important variable in accounting for property tax collections. The coefficient was significant and negative supporting the view that the elderly have a depressive effect on property tax collections. This negative relationship may be due to elderly property owners with limited incomes being more susceptible to property taxes or possibly because this group has less need for traditional public services and seeks to limit the services provided, especially schools. The percentage of the population enrolled in school had a significant and positively signed coefficient showing, on average, a one percent change in the proportional school population represents a change in property tax collections of \$4.95 per capita.

Of primary interest is the number of governments per 10,000 residents. The statistically significant and positive coefficient provides strong evidence that a more complex governmental arrangement for providing services, as measured by number of taxing units per 10,000 population leads to higher per capita property tax collections. Because per capita expenditures are included as an explanatory variable to account for differences in service levels, other factors need to be considered. One possibility is that complex, fragmented local government structures raise the costs of public information and participation which leads to lower levels of public scrutiny and greater local official anonymity. For example, protests about rising property tax bills are likely to be lodged against city officials

Table 2.: Determinants of Property Tax Effort

<u>Variable</u>	<u>Regression Coefficient†</u>	<u>Beta Coefficient</u>
Per Capita Intergovernment Revenues	-.008* (4.51)	-.394
Per Capita Expenditures	.007* (6.05)	.442
Percent in Public Schools	.101* (2.80)	.211
No. of Taxing Units per 10,000 Residents	.042* (3.11)	.310
Percent 65 Years and Older	-.140* (2.53)	-.262
Percent Employed in Manufacturing	.011 (1.11)	.087

†t values shown in parentheses

Constant = .0175

R² adj. = .511

Standard Error of Estimate = 1.21

n = 101

F = 18.44

*Significant at five percent level

because municipalities are more visible. However, in Illinois, city governments receive a relatively small portion of the aggregate property tax dollar. It simply may not be worth taxpayers' time to protest tax increases by a small single function district. However, increases by many small districts can make a difference in the aggregate.

The only variable which performed unexpectedly is the percentage of workers employed in manufacturing, a surrogate for tax base differences. As noted, this variable is not sophisticated and more direct measures of property classification need to be developed. However, this variable exhibited the expected sign.⁷

Overall, the variables shown in Table 1 account for nearly two-thirds of the variation in per capita property tax collections. The zero-order correlation matrix for all variables is provided in the appendix. Only three coefficients in the table are larger than .50. Various formulations of the model were estimated without the potentially collinear variables. The results were stable. Multicollinearity does not appear to be a problem.

An alternative formulation of the regression in Table 1 is to incorporate wealth in the county into the dependent variable. Dividing property tax collections by aggregate income provides a measure of the percentage of income in the county paid in property taxes. The regression results using this dependent variable are shown in Table 2.

Early regressions were estimated using percent of income obtained from manufacturing but this variable was not significant either.

Appendix: Intercorrelation Matrix

	Per Capita Income	Percent in Public Schools	Intergov't Aid	Exp. Per Capita	No. of Taxing Units	Percent in Mfg.	Percent Aged
Per Capita Income	1.00	.089	-.513	.252	-.293	.316	-.571
Percent in Public Schools		1.00	.084	.150	.137	.059	-.094
Intergov't Aid			1.00	.231	-.158	-.181	.332
Exp. Per Capita				1.00	-.108	.042	-.021
No. of Taxing Units					1.00	-.329	.550
Percent in Mfg.						1.00	-.413
Percent Aged							1.00

As in Table 1, each of the variables exhibited the expected sign and was statistically significant with the exception of the percentage employed in manufacturing. The signs were the same and the relative importance of the variables, as shown by the beta coefficients, was consistent with those shown earlier. The explanatory power of the variables in the tax effort equation was lower but this does not affect any of the earlier findings.

In this analysis, the number of taxing units when adjusted for population is significantly associated with the percent of income paid in property taxes when aggregate expenditures for public services have been considered. Expressing the dependent variable in terms of income allows a better understanding of the interactions between income and expenditures per capita. Although the correlation coefficient between these two variables is relatively low (.252), it might be reasoned that wealthier residents demand more services. The results in Table 2 indicate that higher per capita expenditures are associated with greater percentages of income paid in property taxes.

Implications

Although the intention was not to present a case for or against greater decentralization of public services, several observations can be made about the relationship between number of governments and property taxes. First is the finding that a more fragmented governmental structure, as measured by number of taxing units per 10,000 residents, is associated with both higher per capita property tax collections and with a greater percentage of income collected in property taxes. Second, there appears to be a strong association between population characteristics in a county and property taxes used to finance services. Elderly residents, for example, are associated with lower property taxes while wealthy residents (when measured by income) are more willing to pay property taxes.

Given the great interest shown recently for more external control over property taxes and even unilateral reductions in amount to be collected, what are the possible policy implications of these findings? Perhaps the most obvious are the possible effects of more restrictive state imposed tax rate limits on local governments. The results reported suggest that a concerted effort by taxpayer groups to impose stricter state tax limits with the objective of reducing property taxes may in fact have the opposite effect in some areas. Without comparable reductions in local service demands, creating new taxing districts to circumvent the rate restrictions and meet service demands may mean higher property taxes and a worsening of the situation in the taxpayer groups' view.

One needs to be careful, however, that the positive association between more taxing units and level of taxes does not automatically lead to a call for reduction in number of governments. The property tax, while it has disadvantages, has advantages as well. It is highly visible, for instance, and a greater reliance on this revenue may provide an effective control on growth in the public sector, if this is desired. There are many reasons for creating additional taxing units and avoidance of tax and debt limits may not even be the most important. However, more taxing units mean higher property taxes, at least in Illinois.

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