The Impact of Property Taxes and Property Tax Classification on Business Activity in the Chicago Metropolitan Area

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Abstract

We investigate the extent to which Chicago's unusual system of property taxation, whereby commercial and industrial property is "classified" and assessed at a higher rate in Cook County than in the outer counties, has contributed to the relative decline of business activity in the inner county. We find clear evidence that property tax classification raises business property tax rates. However, we find no relationship between property tax rates and the growth in market value of commercial or industrial property; or the growth in the number of business establishments. We do find strong evidence of an effect of property taxes on growth in employment. We cannot rule out the possibility that property tax classification is partially responsible for Cook County's relatively slow growth in business activity. However, the preponderance of our evidence leads us to believe that classification is not the root cause of Cook County's slow growth.

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Introduction

It is a well established fact that over the last few decades central cities and their inner suburbs have been losing population, employment, and business locations to outer suburbs in U.S. metropolitan areas. The Chicago metropolitan area has not been immune to this trend. There are at least two very different explanations for this tendency. One emphasizes changes in transportation costs and other market forces—a process of "natural evolution" in which older core areas of the metropolitan system that were historically favored decline while newer fringe areas are in the ascendancy (see Mieszkowski and Mills 1993). Another possible explanation is that government taxing and spending policies have favored outlying areas relative to the central city and inner suburbs. This second explanation seems to have particular force in the Chicago metropolitan area because of its unusual system of property taxation whereby commercial and industrial property is "classified" and assessed at a higher rate in the inner county, Cook County, than in the outer counties (known as the collar counties).

News stories and policy discussions about the Chicago area frequently assume what "everyone knows," that property tax classification has a substantial detrimental impact on business activity in Cook County (see, for example, Knapp 1999). It is widely believed that classification results in very high tax rates on commercial and industrial property in Cook County—both relative to residential property and relative to commercial and industrial property in other counties in the metropolitan area. The "everyone knows" conclusion drawn from this is that the high tax rates on commercial and industrial property discourage business activity in Cook County. Accordingly, there are a number of proposals to do away with or otherwise modify classification of property in Cook County.

Table 1 presents a comparison of 1990-1996 mean annual growth rates of four alternative measures of business activity for municipalities in Cook County and the five collar counties of Du Page, Kane, Lake, McHenry and Will. We discuss the relative merits of these and other measures of business activity below, but it is clear from Table 1 that on average for each and every measure of growth, each of the collar counties and the collar counties in total grew faster than Cook County.

Table 2 displays mean 1990 property tax rates for the six counties in the metropolitan area. The property tax rates are effective tax rates for all overlapping jurisdictions combined and calculated with respect to the market value of each of three types of property—residential, commercial, and industrial.[1] The average tax rate on residential property in Cook County is slightly lower that the average tax rate on residential property in the collar counties. For both commercial and industrial property the average tax rate in Cook County is more than twice as high as for the collar counties.

The question before us is whether the tax rate differentials in Table 2 explain the growth rate differentials in Table 1. That taxes might have a detrimental effect on business location decisions and economic activity within a metropolitan area has been the subject of much empirical work. Four studies published in the early 1980s all arrive at the conclusion that local taxes, including the property tax, have a statistically significant effect on the location of business activity across jurisdictions within a metropolitan area. Wasylenko (1980) examines the effect of property taxes on the number of firms relocating to the suburbs of Milwaukee from 1964 to 1974. Fox (1981) examines the effect of taxes and spending on the amount of industrial land in municipalities in the Cleveland metropolitan area in 1970. Charney (1983) examines the effect of local taxes on new firm locations in zip code areas in Detroit from 1970 to 1975. McGuire (1985) examines the effect of property taxes on the location of business building permits in the Minneapolis-St. Paul metropolitan area from 1976 to 1979. While the robustness and level of statistical confidence of the results varies from study to study, the constancy across the different time periods and samples employed in these four studies of the conclusion that taxes matter is remarkable.

Each of these earlier studies relied on one cross section to estimate the relationship between economic activity and taxes. This approach leaves the studies open to the criticism that some unmeasured factor correlated with taxes may be the driving force behind the estimated negative effect of taxes. Mark, McGuire and Papke (1999) are able partially to overcome this potential criticism by employing a panel data set on nine jurisdictions comprising the Washington, DC metropolitan area from 1969 to 1994 and including fixed effects for the jurisdictions in their sample. Their dependent variable is annual growth in employment, and among their independent variables are several effective tax rates lagged one year. Contrary to many of the earlier studies they find that the real property tax is not a significant determinant of business activity as measured by employment growth. However, they find that the sales tax and the personal property tax are significant, negative determinants of employment growth.

In the tradition of the earlier studies, we seek systematic evidence of the effect of property tax differentials on business locations and economic activity across municipalities in the Chicago metropolitan area. Our study is similar to many of the previous studies in that we examine the effect of taxes at the beginning of a period on the growth of subsequent economic activity. Our study differs from many previous studies in that we examine multiple measures of business activity, thus providing an examination of the robustness of the results.

The Chicago metropolitan area provides both advantages and disadvantages for such a study. The large number of municipalities provides a large sample size and great variability. The variability in tax rates is further accentuated by the application of a classified property tax system in Cook County. This difference in the property tax systems between Cook County and the five suburban counties presents difficulties for the analysis, however, because it makes it difficult to calculate comparably defined effective tax rates.

McDonald (1993) examines the effect of average countywide property tax rates on average countywide industrial, commercial and residential property value growth rates in the Chicago metropolitan area from 1982 to 1988. He finds that higher property tax rates are associated with lower growth in the commercial and industrial property tax base. Our study differs substantially from McDonald's in that our unit of observation is the municipality, recognizing the fact that effective tax rates vary greatly across municipalities within a given county. The questions we ask are similar: Has property tax classification driven business activity out of Cook County? Or, is the property tax a significant determinant of business activity for municipalities in the six-county region? Before we address these questions we explain property tax classification in more detail and draw the link between classification and business tax rates.

Property Tax Classification and Business Tax Rates

In most counties in Illinois, the law requires that real estate parcels be assessed at 33.3% percent of their fair market value. The 1970 Illinois Constitution allows counties of over 200,000 inhabitants to classify property and assess different classes at different fractions of fair market value. Only Cook County has chosen to adopt a system of property classification.[2]

Currently, Cook County assesses real estate in six regular classes and six incentive classes each with different legal assessment levels. However, as shown in the third column of Table 3, over ninety percent of taxable Cook County real estate is in just three classes: residential, commercial, and industrial. In the remainder of our discussion we focus exclusively on these classes. The first column of Table 3 presents the legal assessment levels specified in Cook County. The second column shows that, according to official Illinois Department of Revenue studies comparing assessed values to market values of properties actually sold in Cook County, actual assessment levels are in fact below the levels legislated by county ordinance.

The roughly 3-to-1 ratio of actual assessment to sales ratios for commercial relative to residential property means that in Cook County the owner of commercial real estate would pay roughly three times as much property tax as the owner of similarly-located residential real estate with the same market value. In contrast, in the collar counties owners of property with the same market value would pay the same amount of property tax.

Table 4 presents a simplified numerical example of classification. The first three rows illustrate a hypothetical municipality within an unclassified county. Assume that there is $100,000 of market value of property (an example in the millions or even billions might be more realistic—but who needs all those zeros), divided into $72,000 of residential property and $28,000 of commercial and industrial (lumped together to simplify the illustration). Both residential and commercial/industrial property are assumed to be initially assessed at one-third of their market value. The total amount of taxes to be

collected—here assumed to be $3,000—is set by the budgets of the municipality, the school district(s), the county, and all of the other local governments in this area of the county. The nominal tax rate of 9.00 percent is then calculated as the ratio of the tax revenue target to the total amount of assessed value ($3,000/$33,333). More relevant to the economic impact and to the property owners is the effective tax rate, the property tax bill divided by the market value of the property. Since in the unclassified example both types of property are assessed at a uniform one-third share of market value, the effective tax rate is a uniform 3.00 percent.

The last three rows of Table 4 illustrate a hypothetical municipality within a classified county. In this county different ratios of assessed value to market value for different classes of property are implemented. The market values and revenue needs of the second hypothetical municipality are identical to the first, but this county classifies and assesses residential property at only one-ninth of full market value while continuing to assess commercial/industrial property at one-third of market value. The large decrease in total assessed value means that the nominal tax rate needed to raise $3,000 in revenue increases to 17.31 percent. Compared to the first case with uniform assessment ratios and an effective tax rate of 3.00% on all classes of property, the effective tax rate on residential property goes down to 1.92 percent and the effective tax rate on commercial/industrial property goes up to 5.77 percent.[3,4] The tax burden has been shifted from residential to commercial/industrial property. It is important to see that these changes in effective tax rates by class occur without any change in the total amount of revenue being raised.

The degree to which classification will shift burdens depends crucially on the property mix—the amount of property in the high assessment class relative to the amount of property in the low assessment class. For instance, in the extreme case of a "bedroom suburb" without any commercial and industrial property, there would be no reduction in the effective burden on residential property.

The example has demonstrated that, other things equal, classification can sharply increase the commercial/industrial tax rate. In the real world, the story is not quite so simple. First, political forces and legal institutions limit the flexibility of tax rates. Communities losing assessed value, i.e., those with large amounts of residential property, will have to increase nominal tax rates in order to maintain tax revenues and service levels, while communities gaining assessed value will be able to decrease nominal tax rates and maintain revenues.[5] Increases in statutory tax rates may not be feasible in communities losing assessed valuation because of property tax rate limits, while decreases in statutory tax rates may not occur because local taxing authorities may be reluctant to give up the revenue windfalls associated with gains in assessed valuation.

Second, we assume in the example that the market value of property is invariant to the relative change in tax rates caused by classification. This may be a reasonable assumption in the short run, but in the long run, buyers will pay less for a parcel that carries with it the obligation to pay higher taxes. If the increased tax payments are fully reflected in

reduced real estate values, the market value of commercial and industrial property will decline from the $28,000 assumed in the example. By the same reasoning, the market value of residential property will increase to reflect the lower tax burden.

Third, classification may have less impact on the taxes businesses actually pay than implied by the example. Because of the high tax rates associated with classification, policymakers may adopt tax incentives and other subsidies for commercial and industrial properties located in Cook County. Some of these might take the form of property tax abatements or special assessment classes, thus directly reducing the property tax base. Others, such as tax increment financing, maintain full tax rates but earmark tax revenues for subsidies to business. These tax breaks are likely to be especially targeted at the most mobile businesses. Hence, average tax rates on commercial and industrial property may overstate tax rates on businesses that are most likely to change the location of their business activities.

Nonetheless, we saw in Table 1 that average effective tax rates for commercial and industrial property in Cook County are much higher than for the adjacent collar counties. We turn next to an empirical study of a possible link between tax differentials and business activity differentials.

Impact of Property Tax Rates on Business Activity

From an economic perspective we would expect property taxes to exert their primary influence on new capital investment and maintenance of the existing capital stock. Since growth in the amount of commercial and industrial property is influenced by the amount of capital investment, we expect an inverse relationship between property tax rates and growth of the commercial and industrial property tax bases. A measure of new investment is the growth in the number of business establishments in a municipality; we would expect a negative relationship between property taxes and this variable. Since capital and labor are often complements in the production process, the property tax rate may also be inversely related to growth in employment.

To investigate whether property tax differentials are an important determinant of business location decisions and economic activity, we use data for 260 municipalities in the six-county Chicago metropolitan area over the period 1990 to 1996 to estimate equations with various measures of growth in economic activity as the dependent variable, and property taxes and other location factors as the independent variables. We employ four different measures business activity, none of which is perfect.

Our first two measures are the annual growth in market value of commercial property from 1990 to 1996 and the annual growth in market value of industrial property from 1990 to 1996.[6] These measures do not capture the "ideal" of total capital investment because they reflect the market value of taxable property only, which does not include certain types of equipment and machinery. Also, real estate values may appreciate

because of changes in market conditions or changes in government services that are unrelated to the level of business activity. One advantage to these two measures is that we have a nearly complete sample of municipal observations (258 municipalities for commercial property and 255 municipalities for industrial property).

Our third measure of the change in business activity—annual growth in the number of establishments from 1990 to 1996—is flawed because it is merely a count of establishments regardless of size. Thus, a mom-and-pop dry cleaners is counted as equivalent to a large manufacturing establishment. Our final measure—the annual growth in employment from 1990 to 1996—reflects employment changes associated with newly locating firms, but also employment changes associated with expansions and contractions at existing firms, and it is not a measure of capital investment. A further problem with our third and fourth measures of economic activity is that they are restricted to a smaller sample—110 municipalities. The sample, compiled by the Illinois Department of Employment Security (1998), includes most larger municipalities and some smaller municipalities.[7] Because of the differing advantages and disadvantages of our four measures, we examine all four rather than select one or two as more or less representative of an ideal measure of business activity.

In Table 5 we display descriptive statistics for our four dependent variables. The means of the growth rates of the market value of commercial and industrial property from 1990 to 1996 were 4.5 percent and 3.8 percent, respectively. The minimum values for both variables occurred in municipalities in Cook County, while the maximum values occurred in municipalities in the collar counties (Lake County to be specific). The mean of the growth in the number of establishments from 1990 to 1996 was 4.0 percent, with the largest growth (15.9 percent) occurring in a municipality in McHenry County and the smallest growth (a decline of 2.3 percent) occurring in a municipality in Lake County. Growth in employment ranged from –9.8 percent (in a Cook County municipality) to 17.2 percent (in a municipality in Lake County) with a mean of 2.0 percent.

In Table 5 we also display descriptive statistics for the set of independent variables we include in our empirical model. These variables are chosen because they capture characteristics of the municipalities that are predicted to affect the profitability of firms or because they are standard controls in models of this type. Our key hypothesis variable is the 1990 effective tax rate on commercial property (effective tax rate on industrial property in one case), which is the same as the effective tax rate on residential property in the counties that do not classify property. The mean for this variable is 3.9 percent with the minimum tax rate occurring in a municipality in the collar counties (Will County, to be specific) and the maximum tax rate occurring in a municipality in Cook County.

In addition to the tax rate variables, our specification includes a number of controls. Dummy variables for the six counties control for any county-specific effects not captured by the other measures. Descriptive statistics for the remaining variables are shown in Table 5. The residential share of property market value in 1990 controls for the effects of zoning and the initial level of commercial/industrial activity in the municipality. The

population density in 1990 controls for market demand and congestion. The distance to the central business district and this distance squared allows for a non-linear relationship with (attraction to and repulsion from) proximity to the CBD. The share of the population below the poverty level in 1989 captures the effect of concentrations of poverty. The log of per capita income in 1989 controls for market demand and the desirability of the community. Finally, three demographic variables capture the racial and age composition of the community.

Tables 6-9 present the results for the four dependent variables. For each dependent variable we estimate four equations. In the first regression we include the tax rate as the only independent variable to examine the simple correlation, controlling for no other factors. In the second regression we add the county dummy variables to examine the effect of tax rates controlling for county-wide factors. In the third regression we omit the county dummy variables and include the set of economic and demographic variables described above to examine the effect of tax rates controlling for these other factors. The final regression, our preferred specification, includes the entire set of independent variables.

The results for the growth in market value of commercial property from 1990 to 1996 are displayed in Table 6. We find that the simple correlation between this measure of business activity and the property tax rate is negative and highly significant (column 1) and that this pattern essentially holds true when we control separately for the economic and demographic variables (column 3). However, when we control separately for county-wide effects (column 2), the effective tax rate on commercial property does not have a statistically significant impact on the growth in value of commercial property (the t-statistic of 1.33 indicates significance at only the 19% level of confidence). Once we control for all factors that we hypothesize to be important, the marginal effect of the property tax rate vanishes (column 4). Differences in the effective tax rate on commercial property do not help explain differences in the observed rates of growth of the market value of commercial property across municipalities during this period. The individual county dummy variables are significant in this most fully specified equation and indicate that even after controlling for many municipal-specific factors, the growth rate of commercial property market value was higher on average in each of the collar counties relative to Cook County. Only two of the control variables are individually statistically significant (at the 10 percent level of confidence) suggesting that population density and distance to the central business district were negative factors.

In Table 7 we present results for the growth in market value of industrial property from 1990 to 1996. As indicated by the low R-squared, we are not able to explain much of the variation in this measure. The results for the industrial tax rate variable are not robust to specification changes. In column (1) the simple correlation is negative and statistically significant, but once the county dummy variables are included (column 2) the effect falls to zero, indicating that there was not a separate effect of the tax rate once we account for county-wide factors. In column (3), in which the county dummy variables have been omitted but the other control variables are included, we again find a significantly negative

effect of the property tax rate. In our most fully specified model (column 4), the coefficient on the property tax rate variable is not statistically significant at conventional confidence levels.

In Table 8 we display results for the growth in the number of establishments from 1990 to 1996. In the most fully specified equation (column 4) we find that the property tax rate did not exert an effect once we controlled for other factors. The simple negative correlation between growth in the number of establishments and the property tax rate (column 1) disappears when the economic and demographic variables are included in the specification (columns 3 and 4). We conclude that the property tax rate had no effect on the growth rate of the number of establishments.

In our final set of results we examine the growth in employment from 1990 to 1996 (Table 9). Here we find consistent results for the property tax rate across the four specifications. Higher property tax rates discouraged employment growth in municipalities in the Chicago area during this period. In the most fully specified model (column 4), the county dummy variables exhibited negative and significant effects indicating that, once other factors were accounted for, employment in the collar counties grew more slowly than Cook County. We know that the collar counties experienced higher growth in employment during this period (see Table 1), but these results indicate that this higher growth was not something inherent to the collar counties.

To summarize our results for the property tax rate variable, we find only limited evidence in support of the hypothesis that property taxes are a deterrent to business location decisions and economic activity. If we focus on the results in column (4) of each of the tables we find that property taxes were an important factor in explaining employment growth only. Differences in property tax rates did not help to explain differences in the growth in the number of establishments or the growth in commercial or industrial property market value across municipalities in the Chicago metropolitan area from 1990 to 1996. The fact that we find mixed results with respect to the property tax is due in part to the vast differences in the dependent variables but is probably also attributable to the frailty of the influence of property taxes once other important location factors are considered.

This methodology relates differences in growth rates across municipalities to differences in beginning-of-period property tax rates, controlling for other factors hypothesized to influence business location decisions and economic activity. High (or low) tax rate municipalities can be found both in Cook County, the only county to classify property, and in the collar counties. The results reflect the effects of classification only in so far as property tax rate levels reflect classification. We have illustrated above how the classification system in Cook County tends to raise the tax rates on commercial and industrial property, all else equal. Thus, the results for the effect of property tax rates on economic activity do reflect indirectly the effect of classification on economic activity. To obtain a more direct answer to the question of the effect of classification we examine in

the next section the same four measures of business activity for municipalities on either side of the Cook/collar border.

Effects of Property Taxes at the Border of the Classified Area

One hypothesis that directly relates classification to economic activity is the prediction that there should be a disparity in business activity proximate to the Cook/collar border. Whatever other forces of attraction or repulsion of business activity are present, business activity that would otherwise favor a near-border site should disproportionately locate on the unclassified, low-tax, or collar-county side of the border. We expect classification and property tax differentials to have stronger effects at the border than elsewhere in the metropolitan area because locations on either side of the border are likely to be good substitutes.

To look for border effects we restricted the municipalities in our sample to those within four miles of the Cook/collar border. Table 10 presents the mean growth rates of the four economic activity measures for municipalities in Cook within 4 miles of the county border (the Cook border sample) and in any of the collar counties within 4 miles of the Cook border (the collar border sample).

As we found with the full sample (Table 1), Table 10 illustrates that the growth rates in the Cook-border municipalities (column 1) are less than the growth rates in the collar-border municipalities (column 2) for all four activity measures. This is consistent with the hypothesis of classification-induced differences. However, these differences in growth rates may not be due to differences in property tax rates but may be attributable to other differences in municipalities. Important other determinants such as residential share of property, population density, distance to the central business district, poverty rates, income per capita, and demographic differences are not considered in the comparison of group means. To take these other factors into account, we reproduce our regression estimates with the restricted sample of municipalities within four miles of the border. Table 11 summarizes the regression results for just the tax variables and just specification (4) with the full set of control variables representing non-tax influences on growth.[8] We report the coefficients from Tables 6-9 for the full sample along side corresponding coefficients obtained with the border sample. If property tax differentials have an important influence on business activity, we would expect to find a stronger impact of differences in property taxes at the border (with this restricted sample) than elsewhere in the metropolitan area (with the full sample of municipalities) because other attributes of the locations (e.g., access to suppliers and customers) are likely to be more similar.[9]

The results indicate that the coefficient on the tax rate variable for the border-only sample for the growth in market value of commercial property is insignificantly different from zero, which does not differ from our finding using the full sample. In contrast, we find a clear difference between the two coefficients for the tax rate variable in the growth in market value of industrial property—the border-only sample has a coefficient of –2.81

and is highly significant while the corresponding full-sample coefficient of –0.92 is insignificant. The coefficient on growth in number of new establishments is positive but insignificant in both the full and border-only samples. The coefficient on the tax rate variable in the growth in employment regression for the border-only sample is virtually the same as for the full-sample.

The evidence from this comparison lends little support to the hypothesis of a "border effect" distinguishing communities close to but on different sides of the dividing line between classified and non-classified counties. For three of the four dependent variables, we find no extra sensitivity to tax rate differentials for near-border municipalities—that is, no border effect. What evidence there is for a border effect comes only from the comparison of regression results for growth in the market value of industrial property. Here we find that the property tax rate has a stronger and more statistically significant negative effect in the border-only sample than in full sample.

Conclusion: Building the Future as a Process in Time

"Everyone knows" that property tax classification has driven business activity out of Cook County. The results of our systematic empirical analysis lend, at best, limited support to this assertion. While business activity by any reasonable measure has grown at a much slower pace in Cook County relative to the collar counties in recent years, the explanation for this fact rests largely elsewhere. Indeed, if we pull away from the narrow focus on the Chicago metropolitan area, we see that central cities and their inner suburbs around the country are attracting business activity at a much slower pace than their surrounding suburbs (see Mark, McGuire, and Papke, 1999). This phenomenon is occurring in metropolitan areas with and without classification and in metropolitan areas with local government configurations and fiscal systems that differ greatly from those in the Chicago metropolitan area.

Our approach is to control for other factors hypothesized to be important in determining business locations and economic activity and to ask whether there is an additional effect of classification once these other important factors have been taken into account. For property tax classification to have an important influence on business activity in Cook County two conditions must be met. First, classification must drive up the property tax rate on business property. Second, higher property tax rates in one municipality must result in slower growth in business activity compared to another municipality with lower property tax rates. If business activity in municipalities chosen from throughout the metropolitan area is not affected by differences in property taxes, business activity in municipalities near the border of the classified area must be sensitive to tax rate differentials for classification to have an effect on economic activity.

The first part of this two-part test is answered by the figures reported in Table 1: On average, Cook County property tax rates on businesses are much higher than they are in the collar counties. While part of the difference in observed effective tax rates is due to

factors other than classification (for example, to differences in the amount of property taxes raised), it seems clear that business property in Cook County faces higher tax rates than it would if classification did not exist.

Our answer to the second part of the test—Do differences in property tax rates influence the location of business activity?—is much less certain. Our exploration of the empirical relationship between property tax rates and four measures of business activity yields decidedly mixed results. Focusing on our preferred specification and the results using municipalities drawn from throughout the region (column 4 of Tables 6-9), we find no relationship between property tax rates and the growth in market value of commercial property; no relationship between property tax rates and the growth in market value of industrial property; and no relationship between property tax rates and the growth in the number of business establishments. The only variable for which we find strong evidence of an effect of property taxes is growth in employment. This strong statistical relationship between property taxes and employment growth is difficult to reconcile with our findings for the other three measures of business activity. Taken all together, we conclude that the evidence from the component of the analysis that examines municipalities throughout the region provides only limited support for the notion that high property taxes are a deterrent to business activity.

We postulate that classification might have a stronger impact on municipalities near the Cook County border because other factors such as proximity to the central business district are similar and therefore less likely to dominate the location decision. Our results, reported in Table 11, support this hypothesis for only one of our variables. We find virtually the same pattern of effects in the border region as we found in the region as a whole for the growth rate of commercial property value (no effect of property tax rates), the growth in the number of establishments (no effect of property tax rates), and the growth in employment (a statistically significant and negative effect of property tax rates). For the growth in market value of industrial property, we found no effect of the property tax in the region as a whole, but we found a strong and significant negative effect of the property tax for municipalities at the border. This result suggests that once an industrial firm decides to locate within four miles of the Cook County border, property tax differentials are an important factor in that decision.

We have compiled an extensive data set and estimated a generally accepted econometric model of the location of business activity. Our results are mixed and inconclusive and must be considered with caution. Several of our variables are measured imprecisely and our ability to control for all important factors in business location decisions is hampered by a lack of data. Because of our results for employment and for industrial property in the border-only sample, we cannot rule out the possibility that property tax classification is to some extent responsible for Cook County's relatively slow growth in business activity. However, the preponderance of our evidence leads us to believe that classification is not the root cause of Cook County's slow growth.

Endnotes

[1] There are over 1200 local governments with property taxing authority in the six-county Chicago metropolitan area—counties, municipalities, school districts, library districts, and other special districts. The pattern of overlap in these governments creates thousands of different combinations or "tax codes." We assign each municipal government a single tax code—a unique set of overlying governments. Then for each municipality we use data from the Illinois Department of Revenue to calculate the aggregate effective tax rate as the sum of the effective tax rates for the list of overlying governments.

[2] For an excellent discussion of Cook County's system of property tax classification see Swain, et al. (1999).

[3] The ratio of these effective tax rates exactly reflects the ratio of the different assessed-value-to-market-value fractions for the two types of property.

[4] The example abstracts from a feature of Illinois property tax law called county equalization. The state assigns each county an equalization factor or "multiplier" to bring the average assessment level up to a state-wide target of 33.3 percent of market value. So the adjustment to classification would actually be in two steps: first the calculation of an equalization factor and then the calculation of nominal tax rates to be applied to equalized assessed value. The end result in terms of effective tax rates is the same.

[5] Changing the example to increase the assessments on commercial-industrial property would have this result. The application of a county-wide equalizer could also result in gains in tax base for some municipalities.

[6] The derivation of these variables uses the assessed value of property, which is adjusted to market value using official assessed to market value estimates from the Illinois Department of Revenue.

[7] The IDES reports data for "major cities," but does not have a formal definition of that term. Historically there was a size cut-off, but over time municipalities have been added to the sample on the basis of requests to the department.

[8] The results for the non-tax variables in the border-only sample are similar in sign and significance to the results for the full sample for the three dependent variables reported in Tables 6, 8, and 9. However, for the dependent variable measuring the growth in market value of industrial property, the results for the non-tax variables in the border-only sample differ somewhat from the full sample results shown Table 7—in the border-only sample, all of the county dummies are negative, though insignificant, the

distance to the CBD is significantly positive, and the distance to the CBD squared is significantly negative.

[9] Holmes (1998) contains a detailed discussion of the rationale for differences in business activity along jurisdictional borders.

Bibliography

Charney, Alberta. 1983. "Intraurban Manufacturing Location Decisions and Local Tax Differentials." *Journal of Urban Economics* 14:184-205.

Fox, William. 1981. "Fiscal Differentials and Industrial Location: Some Empirical Evidence." *Urban Studies* 18:105-11.

Holmes, Thomas J. 1998. "The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders." *Journal of Political Economy* 106:667-705.

Illinois Department of Employment Security. 1998. *Where Workers Work in the Chicago Metro Area, Summary Report: 1972-1997p*, Chicago, IL. [Data on establishments and employees by city of employment.]

Illinois Department of Revenue. "Property Tax Data Files," various years. [Data on property tax revenues and equalized assessed values by unit of government and by type of property.]

Knapp, Kevin. 1999. "Cook County Fights to Keep Business Base." *Crain's Chicago Business* 4, no. 41 (July 19).

Mark, Stephen T., Therese J. McGuire, and Leslie E. Papke. 1999. "The Influence of Taxes on Employment and Population Growth: Evidence from the Washington D.C. Metropolitan Area." unpublished manuscript (July).

McDonald, John F. 1993. "Local Property Tax Differences and Business Real Estate Values," *Journal of Real Estate Finance and Economics* 6:277-287.

McGuire, Therese J. 1985. "Are Local Taxes Important in the Intrametropolitan Location of Firms? An Empirical Analysis of the Minneapolis-St. Paul Metropolitan Area." *Journal of Urban Economics* 18:226-34.

Mieszkowski, Peter, and Edwin S. Mills. 1993. "The Causes of Metropolitan Suburbanization." *Journal of Economic Perspectives* 7:135-147.

Swain, Theodore M., Roland Calia, Mark R. Davis, Guerino Turano, and Bill Vaselopulos. 1999. *Report of the Civic Federation Task Force on Cook County Classification and Equalization.* Chicago, IL: The Civic Federation.

U.S. Department of Commerce, Bureau of the Census, Census Bureau, http://www.census.gov/population/censusdata/places/17il.txt.
[Data on land area of cities.]

U.S. Department of Commerce, Bureau of the Census, http://www.census.gov/population/estimates/metro-city/scts96/sc96t_IL.txt.
[Data on population by city.]

U.S. Department of Commerce, Bureau of the Census, http://venus.census.gov/cdrom/lookup (file STF3A).

[Data on income, race, and age by city.]

Wasylenko, Michael. 1980. “Evidence of Fiscal Differentials and Intrametropolitan Firm Relocation.” *Land Economics* 56:339-49.

Table 1: Means of Municipal Growth Rate Variables by County

(number of municipalities for which data are available in parentheses)

Variable	Cook County	Collar Counties:					
		Total	DuPage	Kane	Lake	McHenry	Will
Annual Growth in Market Value of Commercial Property 1990 to 1996	1.3% (118)	7.2% (140)	4.1% (29)	8.0% (20)	7.1% (44)	10.3% (23)	7.2% (24)
Annual Growth in Market Value of Industrial Property 1990 to 1996	0.3% (117)	6.9% (138)	6.2% (28)	9.6% (20)	6.4% (44)	4.7% (22)	8.2% (24)
Annual Growth in Number of Establishments 1990 to 1996	2.8% (64)	5.7% (46)	4.8% (15)	5.0% (8)	5.0% (13)	9.5% (7)	5.9% (3)
Annual Growth in Employment 1990 to 1996	1.0% (64)	3.4% (46)	3.1% (15)	3.4% (8)	2.9% (13)	5.1% (7)	2.8% (3)

Table 2: Means of Effective Tax Rates by County

(number of municipalities for which data are available in parentheses)

Variable	Cook County (118)	Collar Counties:					
		Total (142)	DuPage (29)	Kane (20)	Lake (46)	McHenry (23)	Will (24)
Tax Rate on Residential Market Value 1990	2.17%	2.54%	2.37%	2.54%	2.52%	2.61%	2.71%
Tax Rate on Commercial Market Value 1990	5.52%						
Tax Rate on Industrial Market Value 1990	5.78%						

(In unclassified counties the tax rate is the same on all types of property.)

Table 3 :Legislated and Actual Assessment Levels for Cook County Property Classes 1996

Property Class	Legislated Assessment Level (percent)	Median Actual Assessment to Sales Ratio (percent)	Share of Total Market Value (percent)
2: Residential (six units or fewer)	16	10.04	71.55
5a: Commercial	38	30.64	16.08

5b: Industrial	36	35.39	4.67

Source: Swain, et al. p. 45.

Table 4: Property Tax Example Showing Situation With and Without Classification

County Class of Property	Market Value	Assessed Value	Nominal Tax Rate	Tax Revenue	Effective Tax Rate
Without Classification					
Residential	72,000	24,000	9.00%	2,160	3.00%
Commercial/Industrial	28,000	9,333	9.00%	840	3.00%
Total	100,000	33,333		3,000	
With Classification					
Residential	72,000	8,000	17.31%	1,385	1.92%
Commercial/Industrial	28,000	9,333	17.31%	1,615	5.77%
Total	100,000	17,333		3,000	

Table 5: Descriptive Statistics for Variables used in the Analysis

Variable	Mean	Standard Deviation	Minimum	Maximum
Annual Growth in Market Value of Commercial Property 1990 to 1996	4.47%	6.33%	-7.99%	54.04%
Annual Growth in Market Value of Industrial Property 1990 to 1996	3.84%	11.20%	-40.73%	115.85%
Annual Growth in Number of Establishments 1990 to 1996	4.00%	3.20%	-2.35%	15.90%
Annual Growth in Employment 1990 to 1996	1.99%	3.91%	-9.80%	17.20%
Effective Tax Rate on Market Value of Commercial Property 1990	3.89%	1.69%	1.02%	9.81%
Effective Tax Rate on Market Value of Industrial Property 1990	4.01%	1.82%	1.02%	10.27%
Residential Share of Property Market Value 1990	73.88%	18.06%	7.59%	100.00%
Population Density 1990	3,137	2,378	12	14,610
Miles to the Central Business District	27	12	0	63
Share of the Population Below the Poverty Level 1989	4.94%	5.26%	0.00%	49.16%
Per Capita Income 1989	20,331	10,975	4,660	70,925
Share of the Population that is White 1990	88.23%	18.26%	0.56%	100.00%
Share of the Population 5 to 17 Years Old 1990	18.53%	3.92%	9.33%	34.51%

Share of the Population over 65 1990	11.07%	5.18%	2.87%	30.94%

Table 6: Regression Estimates of Annual Growth in Market Value of Commercial Property 1990-1996
(absolute values of t-statistics using robust standard errors in parentheses)

Specification: / **Variables:**	**1**	**2**	**3**	**4**
Effective Tax Rate on Commercial Property 1990	-1.5916 (8.65)	-0.4005 (1.33)	-1.0414 (4.86)	0.0655 (0.15)
Du Page County		0.0155 (1.18)		0.0286 (1.85)
Kane County		0.0557 (4.17)		0.0840 (4.16)
Lake County		0.0466 (2.78)		0.0709 (2.87)
McHenry County		0.0790 (3.76)		0.1110 (3.48)
Will County		0.0483 (3.79)		0.0701 (3.75)
Residential Share of Property Market Value 1990			0.0197 (0.64)	0.0107 (0.36)
Population Density 1990			-2.89E-06 (1.30)	-3.94E-06 (1.69)
Miles to the Central Business District			-0.0012 (0.74)	-0.0032 (1.87)
Miles to the Central Business District Squared			2.99E-05 (1.30)	2.80E-05 (1.12)
Share of the Population Below the Poverty Level 1989			-0.0748 (0.77)	-0.1146 (1.15)
Log Per Capita Income 1989			-0.0021 (0.18)	-0.0019 (0.16)
Share of the Population that is White 1990			-0.0069 (0.24)	0.0130 (0.46)
Share of the Population 5 to 17 Years Old 1990			0.1326 (0.73)	0.1942 (1.03)
Share of the Population over 65 1990			-0.0617 (0.62)	-0.0667 (0.68)

Constant	0.1069	0.0348	0.0978	0.0558
	(11.27)	(1.88)	(0.74)	(0.42)
Number of Observations	258	258	258	258
Adjusted R-squared	0.1747	0.2493	0.2082	0.2556

Note: Cook County is the omitted county.

Table 7: Regression Estimates of
Annual Growth in Market Value of Industrial Property 1990-1996
(absolute values of t-statistics using robust standard errors in parentheses)

Specification: / **Variables:**	**1**	**2**	**3**	**4**
Effective Tax Rate on	-1.5055	0.4329	-1.5362	-0.9196
Industrial Property 1990	(4.30)	(1.13)	(3.19)	(1.20)
Du Page County		0.0743		0.0288
		(3.30)		(0.91)
Kane County		0.1073		0.0355
		(3.19)		(0.81)
Lake County		0.0751		0.0155
		(2.49)		(0.31)
McHenry County		0.0579		-0.0252
		(3.19)		(0.55)
Will County		0.0921		0.0153
		(4.06)		(0.41)
Residential Share of Property			0.0750	0.0777
Market Value 1990			(1.76)	(1.80)
Population Density 1990			-3.67E-06	-4.26E-06
			(1.17)	(1.12)
Miles to the			0.0017	-0.0001
Central Business District			(0.58)	(0.03)
Miles to the Central			-2.55E-05	1.20E-05
Business District Squared			(0.56)	(0.20)
Share of the Population			-0.2284	-0.2540
Below the Poverty Level 1989			(1.54)	(1.42)
Log Per Capita Income 1989			-0.0568	-0.0541
			(3.60)	(3.22)
Share of the Population			-0.0752	-0.0709

that is White 1990			(2.07)	(1.85)
Share of the Population			0.0326	-0.0194
5 to 17 Years Old 1990			(0.12)	(0.06)
Share of the Population			-0.1144	-0.1339
over 65 1990			(0.84)	(0.93)
Constant	0.0991	-0.0223	0.6746	0.6407
	(5.25)	(1.04)	(3.60)	(3.37)
Number of Observations	255	255	255	255
Adjusted R-squared	0.0527	0.0712	0.0814	0.0742

Note: Cook County is the omitted county.

Table 8: Regression Estimates of
Annual Growth in Number of Establishments 1990-1996
(absolute values of t-statistics using robust standard errors in parentheses)

Specification: **Variables:**	**1**	**2**	**3**	**4**
Effective Tax Rate on	-0.9027	-0.7032	-0.1445	0.0532
Commercial Property 1990	(6.30)	(4.29)	(0.81)	(0.14)
Du Page County		-0.0017		0.0078
		(0.19)		(0.62)
Kane County		0.0023		0.0110
		(0.18)		(0.57)
Lake County		0.0028		0.0119
		(0.20)		(0.71)
McHenry County		0.0473		0.0476
		(2.70)		(1.44)
Will County		0.0143		0.0258
		(0.83)		(1.73)
Residential Share of Property			0.0068	-0.0058
Market Value 1990			(0.24)	(0.22)
Population Density 1990			-9.53E-07	-4.93E-07
			(0.66)	(0.36)
Miles to the			-0.0013	-0.0006
Central Business District			(1.16)	(0.48)
Miles to the Central			3.26E-05	1.03E-05
Business District Squared			(2.42)	(0.50)

Share of the Population Below the Poverty Level 1989			-0.1222 (1.49)	-0.1079 (1.38)
Log Per Capita Income 1989			-0.0075 (0.93)	-0.0041 (0.52)
Share of the Population that is White 1990			0.0581 (2.91)	0.0635 (2.95)
Share of the Population 5 to 17 Years Old 1990			0.0455 (0.31)	0.0483 (0.33)
Share of the Population over 65 1990			-0.1636 (1.86)	-0.1569 (1.69)
Constant	0.0784 (9.72)	0.0662 (6.80)	0.0955 (0.92)	0.0461 (0.45)
Number of Observations	110	110	110	110
Adjusted R-squared	0.2061	0.2990	0.3608	0.3672

Note: Cook County is the omitted county.

Table 9: Regression Estimates of Annual Growth in Employment 1990-1996
(absolute values of t-statistics using robust standard errors in parentheses)

Specification: **Variables:**	**1**	**2**	**3**	**4**
Effective Tax Rate on Commercial Property 1990	-0.7914 (3.81)	-0.7468 (2.67)	-0.5822 (2.36)	-1.6804 (2.82)
Du Page County		-0.0027 (0.22)		-0.0392 (1.88)
Kane County		0.0021 (0.12)		-0.0672 (2.18)
Lake County		-0.0021 (0.12)		-0.0530 (1.98)
McHenry County		0.0207 (1.44)		-0.0759 (2.34)
Will County		0.0006 (0.03)		-0.0513 (2.13)
Residential Share of Property Market Value 1990			-0.0077 (0.25)	0.0127 (0.42)
Population Density 1990			2.68E-06	2.90E-06

			(0.86)	(0.99)
Miles to the			0.0002	0.0013
Central Business District			(0.12)	(0.76)
Miles to the Central			9.79E-06	1.16E-05
Business District Squared			(0.47)	(0.48)
Share of the Population			-0.3554	-0.3171
Below the Poverty Level 1989			(3.90)	(3.43)
Log Per Capita Income 1989			-0.0397	-0.0446
			(3.16)	(3.52)
Share of the Population			-0.0054	-0.0279
that is White 1990			(0.20)	(0.89)
Share of the Population			0.0776	0.0984
5 to 17 Years Old 1990			(0.47)	(0.56)
Share of the Population			-0.0716	-0.0820
over 65 1990			(0.74)	(0.86)
Constant	0.0535	0.0507	0.4356	0.5277
	(5.23)	(3.33)	(3.00)	(3.59)
Number of Observations	110	110	110	110
Adjusted R-squared	0.0972	0.0725	0.2153	0.2296

Note: Cook County is the omitted county.

Table 10: Means of Municipal Business Activity Variables: Comparison of Cook and Collar Municipalities Within Four Miles of the Cook County Border
(number of municipalities for which data are available in parentheses)

Variable	Cook Border (1)	Collar Border (2)
Annual Growth in Market Value of Commercial Property 1990 to 1996	1.8% (52)	5.7% (48)
Annual Growth in Market Value of Industrial Property 1990 to 1996	1.6% (51)	5.9% (47)
Annual Growth in Number of Establishments 1990 to 1996	3.0% (27)	5.5% (17)
Annual Growth in Employment 1990 to 1996	1.6% (27)	1.8% (17)

Table 11: Tax Rate Coefficients from Growth Rate Regressions Using All Independent Variables (Specification 4) For Full Sample and Border-Only Sample
(absolute value of t-statistics in parentheses)

Dependent Variable	Full Sample (see Tables 6-9)		Border-Only Sample	
	Tax Coefficient	Observations	Tax Coefficient	Observations
Annual Growth in Market Value of Commercial Property 1990 to 1996	0.0655 (0.15)	258	0.2085 (0.20)	100
Annual Growth in Market Value of Industrial Property 1990 to 1996	-0.9196 (1.20)	255	-2.8145 (2.49)	98
Annual Growth in Number of Establishments 1990 to 1996	0.0532 (0.14)	110	0.4085 (0.89)	44
Annual Growth in Employment 1990 to 1996	-1.6804 (2.82)	110	-1.6075 (2.05)	44