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Edited by George W. McCarthy, Gregory K. Ingram, and Samuel A. Moody

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PREFACE

The majority of the world's population now lives in urban areas and depends on urban systems for housing and social and economic goods and services. This number will only increase as cities blossom and expand to accommodate new residents, particularly in developing nations. What remains unchanged, however, is the key role of cities as engines of economic growth, social activity, and cultural exchange. In an effort to support the success and sustainability of cities, this volume explores how policies regarding land use and taxation affect issues as diverse as the sustainability of local government revenues, the impacts of the foreclosure crisis, and urban resilience to climate change.

This collection, based on the Lincoln Institute of Land Policy's 2014 annual land policy conference, addresses the policies that underlie the organization, financing, and development of the world's cities. It is the final volume in the Institute's land policy conference series. Over the years, these meetings have addressed land policy as it relates to a range of topics, including local education, property rights, municipal revenues, climate change, and infrastructure.

We thank Armando Carbonell, Martim Smolka, and Joan Youngman for their advice on the selection of topics and on program design. The conference was organized by our exceptional event team, comprising Brooke Burgess, Sharon Novick, and Melissa Abraham. Our special thanks go to Emily McKeigue for her exemplary management of the production of this volume, to Peter Blaiwas for the cover design, to Nancy Benjamin for maintaining the publication schedule, and to Barbara Jatkola for her tireless and reliable copyediting.

George W. McCarthy
Gregory K. Ingram
Samuel A. Moody

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The Past and Future of the Urban Property Tax

Grant Driessen and Steven M. Sheffrin

The paths to potential increases in revenue for cities, and property tax revenue in particular, differ sharply across the United States. Consider the recent experiences in New Orleans compared with a hypothetical California city. In April 2014, New Orleans mayor Mitch Landrieu was desperately seeking revenue to fill a large budget gap (Bridges 2014a, 2014b). The combination of federal consent decrees mandating reforms in the New Orleans Police Department and the Orleans Parish Prison was forecast to cost the city at least $20 million. In addition, the courts had rejected the city's attempt to reduce payments to the Firefighters Pension and Relief Fund—despite a history of overgenerous benefits and an ill-fated hedge fund investment in the Cayman Islands—which added another $17 million to the bill. Overall, the city needed to fill a gap equal to 7 percent of its general fund.

Landrieu wanted to fill this gap through taxation. Initially, he proposed three different tax increases. The first was an addition of 75 cents to the very low statewide cigarette tax of 36 cents, just for New Orleans. Aside from the wisdom of a relatively small city trying to raise its excise tax above that of its neighboring parishes, the tax faced a number of political obstacles. It would have to be passed by the state legislature, signed by the governor (who had opposed raising the statewide tax), passed by the city council, and then finally put before the voters of New Orleans.

The authors would like to thank Gregory K. Ingram, John M. Yinger, and participants in the Ninth Annual Land Policy Conference at the Lincoln Institute for Land Policy for their helpful comments.

The second proposed tax was an increase in the city's hotel tax, from 16.44 percent to 18.19 percent. This tax would face the same political hurdles as the cigarette tax. It also raised concerns that New Orleans might price itself out of the competitive market for hosting conventions. Hearing this opposition, the Landrieu administration floated another idea—a special development district that would allow the city to collect all the sales and hotel taxes within the district. The genius of the proposal was that the development district was all about future (not existing) revenue streams, but the reaction of the entities that would have had revenue diverted—the state, the Orleans Parish School Board, the New Orleans Convention Center, and the Superdome—was not favorable. Unfortunately for the mayor, the legislature failed to adopt the new cigarette tax, the hotel tax increase, or the special development district.

The third prong of the mayor's tax strategy was a change in the property tax. Landrieu wished to raise the millage rates for police and fire protection. The legislature would have to pass a bill (not requiring the governor's approval) to amend the constitution to permit this additional taxation authority. Voters, both statewide and in Orleans Parish, would have to approve the change. The New Orleans City Council would then have to authorize a second vote in New Orleans for any specific increase. Finally, the city council would have to authorize the voter-approved increase. All told, this would not be an easy road for the mayor. The bill did pass the legislature in 2014; it was narrowly approved by the voters in November of that year and approved by the city council shortly thereafter.

In New Orleans, the restrictions on increases in the millage rates for police and fire protection are more stringent than those on general parish or municipal rates. The Louisiana Constitution allows the latter to be raised by a majority vote in an election. Louisiana cities and parishes also possess the ability to increase their property taxes when assessments increase. Initially when assessed values increase, rates are "rolled back" to hold the level of revenue constant. But the governing body can vote to "roll forward" the rates and take advantage of the higher assessed values. Overall, property tax collections are limited by the very generous homeowner exemption of $75,000, which is approximately one-half median housing prices in Louisiana and the New Orleans metro area. The homeowner exemption does not apply to the police and fire protection millage rates in the city, however.

Now consider a large California city. Proposition 13 prohibits the city from taking any policy actions to increase its property tax revenue (O'Sullivan, Sexton, and Sheffrin 1995). This revenue consists of the city's apportioned share of the county's revenue through a complex formula developed in the aftermath of Proposition 13, which was passed in 1978 (McCarty et al. 2002). A county's property tax is determined by the constitutionally required rate of 1 percent times the base of assessed value. Personal property is assessed at market value, but real property follows the assessment provisions of Proposition 13, which effectively limit increases to 2 percent a year until a property is sold. The assessor is elected at the

county level, so cities lack even the minimal leverage that comes in administering the tax.

This does not mean that property tax revenue cannot be increased. Revenue increases as housing prices increase, but not more than 2 percent. With the turnover of properties, revenue can increase substantially more. Thus, in boom times, increased turnover (bringing properties to market value) and normal 2 percent increases can lead to substantial revenue increases. Revenue can also fall if housing prices fall, as they did in California in the early 1990s and during the Great Recession. A property can be reassessed downward, but not below its factored base year value (acquisition cost plus 2 percent per year) (Sheffrin and Sexton 1998).

Cities in California can seek other property-related revenue through parcel taxes, but these taxes require a supermajority vote of the state legislature and must be a flat amount for each parcel. Fees related to property also are limited by Proposition 218, another constitutional amendment (Dresch and Sheffrin 1997; Sheffrin 1998). Yet California's homeowner exemption is only $7,500, compared with $75,000 in Louisiana, and median housing prices in California—approximately $400,000—are significantly higher than those in Louisiana. Taking into account all these differences, the same percentage increase in housing prices in California and Louisiana will bring in considerably more revenue in California at a similar tax rate.

Which city, New Orleans or the hypothetical California city, faces the bigger challenge in sustaining property tax revenue over time? California is the poster child for tax limitation, but as we have seen, the political obstacles to raising additional property tax revenue in Louisiana also are formidable. Other features of Louisiana's property tax system—a generous homeowner exemption and low median housing prices—also limit its potential to generate urban revenue over the long term. It is not clear that a city in California is worse off than a city in Louisiana in terms of long-term reliance on property tax revenue (even though it may have less immediate discretion).

While these are just two examples, each urban area faces its own unique political and social constraints on property tax rates and assessments. Property markets differ across urban areas as well, with different mixes of residential versus commercial property and differences in prices. All of these factors determine how much a jurisdiction can rely on the property tax over time to support its revenue base. Looking into the future, however, requires recognizing that formal differences in political structures may not be sufficient to explain patterns in property tax statutes across jurisdictions. Reading property tax statutes, though informative, is simply not enough. Nor are speculations based on thoughtful political-economic trends, as offered in Sheffrin (1998).

This chapter explores the role the property tax plays now and can potentially play in the future using an unabashedly empirical approach. We believe that the past is prologue; as a consequence, we begin our look into the future of the

urban property tax by examining how a diverse group of cities have relied on the property tax as a component of their own-source revenue over roughly the past 30 years.

We are fortunate to be able to draw on a new and underutilized data source, the Lincoln Institute of Land Policy's Fiscally Standardized Cities (FiSC) database[1] (Lincoln Institute of Land Policy 2014a). This database addresses the problem posed by the fact that cities across the country have potentially many different types of political relationships with their counties, school boards, or special districts. For example, some cities encompass property-tax-funded schools within their budgets, while others have legally separate school districts, and property tax revenue is not part of their budgets. The FiSC database uses a standardized methodology to make cities comparable despite these differences in political structures. In addition, the Lincoln Institute's Significant Features of the Property Tax database contains a wealth of data. We have used these other data to construct measures of effective property tax rates for different classes of property, indices of classification, and summaries of property tax limitations.

Our data sources are described in detail in the next section. We then move on to a description of the basic trends and patterns of the urban property tax, an explanation of the regressions used to probe these findings more carefully, and a discussion of some cities that might be able to accommodate increased property tax use. We eventually come back full circle, considering emerging trends and even a semi-speculative political economy.

Overview of the Data

Characterizing the state of the urban property tax requires examining data on property and sales tax revenue, intergovernmental transfers, land prices, and property tax laws and limitations. The data set used in this analysis was drawn from several sources.

DATA COLLECTION AND AGGREGATION

Our primary source of data was the Lincoln Institute of Land Policy's FiSC database, which collects information on the demographics and government finances of 112 large cities throughout the United States. Information obtained from the database included collections data on property taxes, sales taxes, own-source taxes, and intergovernmental transfers. This data set offers a number of attractive features. Whereas other data sources used in property tax analysis often measure local government finances at the state level, the FiSC database directly measures the behavior of municipal governments.

1. The database is available at *www.lincolninst.edu/subcenters/fiscally-standardized-cities/*.

The database carefully sorts out each jurisdiction's finances so that the cities' finances are directly comparable to one another. Since the responsibility of providing local public services to a particular area can fall on several types of governments, revenue and expenditure data collected from only one type of government (e.g., U.S. Census Bureau data on individual local governments) can be misleading when looking across urban areas. The FiSC database uses a methodology created by several property tax experts to circumvent this problem.

Revenue and expenditure data are obtained from the U.S. Census Bureau's Census of Government Finance and the Annual Survey of State and Local Government Finances. The FiSC database defines what government behavior is attributable to each city by taking activity from the cities themselves and combining it with an appropriate share of public activity from surrounding and overlapping counties, school districts, and special jurisdictions. As these data were central to our analysis, we quote extensively from the summary of the FiSC methodology provided by the Lincoln Institute of Land Policy (2014a).

> To create the fiscally standardized cities (FiSCs), revenues and expenditures for the city government are combined with a share from any overlying counties, school districts, and special districts. For counties, fiscal variables are allocated to the FiSC database based on the city's share of the county's population. For instance, if a city accounts for 20 percent of the county's population, 20 percent of the county government's revenues and expenditures are allocated to the FiSC.
>
> For each school district, fiscal variables are allocated to the FiSC based on the percentage of students in the school district who live in the central city. Thus, if 75 percent of students in a school district live in the city, 75 percent of that school district's revenues and expenditures are allocated to the FiSC. The number of students in each school district who live in the central city is estimated using geographic information system (GIS) analysis with information on the boundaries of cities and school districts from U.S. Census TIGER shape files and data on school district enrollment at the census block group or tract level for the 1980–2010 period.
>
> For special districts, a two-pronged approach was used to develop the FiSC estimates. First, a Web search was used to determine the rough service area for more than 400 special districts. These special districts included the largest districts in terms of revenues and spending, all housing authorities serving FiSCs, and some selected smaller districts. Fiscal variables were allocated to each FiSC based on the city's share of population in each special district's service area. Although this Web search verified the service area for only about 10 percent of the special districts that are assumed to serve FiSCs, because of their large size these districts account for about 90 percent of special district expenditures allocated to FiSCs.
>
> Second, revenues and expenditures for smaller special districts were allocated to the FiSCs based on the type of special district. For example, airports, seaports, and transit utilities typically serve an entire metropolitan

> area, so fiscal variables were allocated based on the city's share of the metropolitan area population. Hospital districts, library districts, and park districts typically serve a county or smaller geographic area, so allocations were based on the city's share of the county population. Fire districts and certain types of utilities largely serve small municipalities or unincorporated areas; since they almost never serve the cities in the FiSC sample, no revenues or expenditures were allocated to the FiSCs. . . .
>
> It is important to note that the FiSC methodology provides an approximation of local government revenues and expenditures for central city residents and businesses. Determining the precise level of local government revenues and expenditures within city boundaries is far more complicated, and virtually impossible to do for 112 cities over the 34 years included in the FiSC database. For example, it would be more accurate to allocate property tax revenues based on the geographic distribution of property values rather than using the [per-person and per-student allocations]. There is, however, no central source for data on property tax bases at the city, school district, or county level. These data would be needed to allocate property taxes for overlying governments that cross city lines. While particular city areas may have distributions of revenue bases (property in particular) and expenditures that depart from the spatially uniform assumption used for the FiSC estimates, there is no reason to believe that these assumptions would lead to a systematic over- or underassignment of revenues or expenditures to central cities. (Lincoln Institute of Land Policy 2014a)

We obtained two sets of land values from the Lincoln Institute's Land and Property Values in the U.S. database (Lincoln Institute for Land Policy 2014b). Land values at the state level, developed by Davis and Palumbo (2007), are available for all the observations taken from the FiSC database. While the state-level data provide complete coverage, these data use a larger measure of information than the other city-level information in the database. Therefore, we supplemented these data with Metro Area Land Price information, provided by Davis and Heathcote (2007), which is available for 46 of the cities in the database (Lincoln Institute for Land Policy 2014c). Both sets of land values were calculated by subtracting the cost of the housing structure from the overall home value.

We used data from several sources to establish comprehensive information on the tax laws in effect for each of the observations in our data set. Information on state property tax laws was taken from Lincoln's Significant Features of the Property Tax database.[2] These data are available for every state and year from 2006 to 2012 and include details on tax rates, limitations, and exemptions across localities.

Property tax limitations are legal restrictions on the assessment and collection of levies on property. The popularity of property tax limitations has increased in recent decades in response to complaints regarding the equity and

2. The database is available at *www.lincolninst.edu/subcenters/fiscally-standardized-cities/*.

Table 5.1
Types of Property Tax Limitations

Limitation	Definition	Example
Tax rate	Restricts the rate at which property may be taxed, normally through a maximum percentage.	In a state with a 5% tax rate limitation, the owner of a house valued at $100,000 may pay no more than $5,000 in property taxes.
Assessment	Restricts the annual increase in the assessed value of a particular property.	In a state with a 5% assessment limitation, a property that was valued at $100,000 in year 1 may not have an assessed value of more than $105,000 in year 2, even if the market value exceeds that amount.
Revenue	Limits the amount of revenue that a government may collect from property taxes.	In a state with a 5% revenue limitation, a government that collected $100 million in property taxes in year 1 may not collect more than $105 million in year 2, even if property values and tax rates allow for further collections.
Local	Limits the effective property tax rates within a specific local jurisdiction (county, municipality, school district, etc.).	A local limitation may restrict the amount of property taxes collected in a given school district to 3% of total property values, or it may cap the growth in property revenues at 6% within a given county.

Source: Haveman and Sexton (2008).

fairness of these levies.[3] This research identifies four major types of property tax limitations: tax rate, assessment, revenue, and local (table 5.1).[4] Tax rate limitations set a maximum rate at which property may be taxed, normally in terms of a percentage of a property's overall value. Assessment limitations restrict the increase in valuation that a property may undergo over a period of time. Such limitations are normally expressed either as a percentage or in relation to inflation levels. Revenue limitations restrict the amount that property tax receipts may increase in a given year. These restrictions may or may not be linked to population and inflation levels. While these three limitations are typically imposed at the state level, local limitations, also called levy limitations, are imposed on smaller

3. See Haveman and Sexton (2008) for a detailed description of property tax limitations and Vigdor (2004) for a discussion of possible motivations behind such restrictions. Sheffrin (2013) provides some psychological foundations for these limitations.

4. Subsequent definitions of tax rate, assessment, and revenue limitations are similar to the terms described in Anderson (2006). Our description of local limitations mirrors the term as defined in Haveman and Sexton (2008).

jurisdictions—counties, municipalities, school districts, or special districts—and might place limits on the rates or revenue that these governments may assess.

The other major way to limit property tax collections is through the establishment of preferential tax rates for certain types of property. Governments that seek to attract specific types of real estate investment may lower the tax rates imposed on those types of property. For example, a city may lower its commercial property tax to increase its business presence. Alternatively, voters may want higher rates on commercial property to reduce their own share of taxation. Preferential tax rates may also be imposed to increase the fairness of the tax system. Seniors and military veterans, for example, are granted preferential property tax rates in several states. Property taxes also may be waived for certain segments of the population; these are called property tax exemptions.

Classification of property—that is, different ratios of assessed value subject to taxation to assessor-determined market value—is one way to change the tax burden across different types of property. Consider a town that taxes residential property at 50 percent of assessed value but commercial property at 100 percent of assessed value. The residential-to-commercial ratio would be 0.5 in this jurisdiction.

In addition to the residential-to-commercial ratio, we also used measures of effective tax rates, which take into account both differences in the classification of property and the ratio of actual market value to assessor-determined value for different types of property (along with any differences in nominal tax rates). (The effective tax rate is essentially the ratio of taxes to true market value.) In addition, we used the effective tax rate data provided by the "50 State Property Tax Study 2012," a joint venture of the Lincoln Institute of Land Policy and Minnesota Center for Fiscal Excellence (2013). Finally, we obtained data on local and state revenues by tax source from Census of Governments data, which derived the information from U.S Census Bureau reports. These data were used to conduct various state and local sensitivity checks on the results of our empirical analysis.

Additional measures of economic and demographic composition for each of our observations were included to account for other sources of variation across cities. The percentage of all inhabitants in the general metro area who are employed, as provided by the Bureau of Labor Statistics (2014), was the first variable. There were several reasons for using this variable. First, it is a simple and easily available measure that might be related to a city's tax base. City officials should be concerned about the effects of their actions on the local tax base. Second, cities with a relatively smaller labor force may have fewer resources or increased demands for education expenditures. Depending on the political dynamics, these factors could lead to either higher or lower property taxation.

The second variable measured the ratio of revenues raised by the city government to those raised in the FiSC. This factor was included to capture the level of political centralization in a given locality, with higher values representing more consolidated urban political systems. While the FiSC provides a nice measure

of the actual underlying fiscal activities in a locality, by design it does not map onto the political structure of the locality. In principle, the political structure of a locality may matter. For example, more-centralized political systems may find it more difficult to raise property taxes, because their actions may be more salient to voters. If there are independent political factors that affect the property tax share in a city, this variable can potentially capture them.

VARIABLE CONSTRUCTION

The share of property taxes as a percentage of own-source tax revenue was used to test for the determinants of tax receipts across localities in a given time period. Own-source tax revenue refers to all taxes that are levied by the city government, which include property taxes, general sales taxes, and special excise taxes on products such as cigarettes or alcohol. Importantly, this excludes intergovernmental transfers, which might fluctuate as a result of factors such as business cycles and thus skew our results. The measure of own-source revenue used here does not include fees, although a separate analysis uses a measure with fees used in the base.

We also calculated the shares for two other variables, intergovernmental transfers and sales tax revenue, for use as independent variables in the regression analysis. Intergovernmental transfers were measured as a percentage of own-source revenue in order to test for how these collections may vary with property tax levels. Own-source revenue was calculated for this variable in the same way as it was for the property tax share measure.

We followed a different procedure to calculate the sales tax revenue. Both property and sales taxes are included in the own-source revenue definition used as the denominator of the other share variables. However, including property tax receipts in the denominator for a sales tax measure would make such a measure inherently endogenous in our framework. Since property and sales taxes are the two largest sources of revenue for local governments, a city with a higher share of property tax revenue will, all else being equal, have a smaller portion of sales tax revenue, since the share available for other taxes will be relatively smaller in this instance. Use of the same own-source revenue measurement would, therefore, negatively bias the coefficient of regressions with this sales tax variable. The sales tax share was thus taken as a percentage of own-source revenue excluding property tax receipts for all subsequent empirical work.

It is difficult to find simple empirical measures for tax limitations, as they are typically quite complex. For example, what is the best way to numerically express the difference between (1) an assessment limit tied to the lesser of 3 percent or the growth through inflation; and (2) a local limitation that restricts the property tax rate in a school district to a total of 5 percent? We decided to capture the effects of tax limitations on property tax share with a series of indicator variables. We constructed indicator variables for each of the four types of tax limitations in table 5.1 (tax rate, assessment, revenue, and local). Additionally, we explored interactive indicator variables as well when there were multiple limits.

We constructed two types of effective tax rates using the 2012 effective tax rate data from the Lincoln Institute of Land Policy and Minnesota Center for Fiscal Excellence (2013). The first ratio compared the effective tax rates imposed on homestead and business property. This variable was intended to capture how relative exemptions to businesses and homeowners changed relative property tax receipt levels. The second ratio compared the effective tax rates applied to apartment and homestead dwellings and sought to capture the effect of exemptions applied within types of residential property.

In addition to using the land value data, we also indexed land values within observations to the first year of the study. The raw land data were helpful in trying to explain variations in property taxes across urban areas in a given time period. The within-city indexed prices were used to capture the determinants of changes in property tax collections over time in a given urban area. Finally, we assigned each city a regional indicator variable equivalent to one of those used by the U.S. Census Bureau: Northeast, South, Midwest, and West.

Descriptive Analysis

What do urban property taxes look like today compared with those in the past? Table 5.2 displays the summary statistics for property tax shares measured at the local and state levels. Property tax receipts as a share of own-source revenue dropped significantly from 1977 to the mid-1980s, most likely in response to a series of tax limitations that were introduced in several states during this time period.[5] Since that time, however, the property tax share has been relatively stable regardless of the unit of measure, with averages ranging from 39 and 41 percent at the local level in 1985–2010 and 42 and 45 percent at the state level in 1992–2010. The standard deviation of these observations also has remained relatively constant at between 11 and 13 percent of own-source revenue, indicating that the lack of movement in the means is not suggestive of any dispersion in the rates across observations.

Table 5.2 also contains summaries of land value information in constant dollars. The mean of land value observations exhibited much more fluctuation over time than did the mean of property tax shares, increasing by more than 35 percent at the local level between 1985 and 2002 before falling in 2010. State land value observations displayed even more variation, as the 2002 mean was nearly three times that in 1977. The variance of these observations also increased over time, more than doubling from 1985 to 2010 at both the state and local levels. This information suggests that land values have increased relative to other goods over time, but also that these measures are highly sensitive to the effects of business cycles. That property tax shares have remained relatively constant despite

5. One of these property tax limitations was Proposition 13, passed in California in 1978. For a detailed description of this limitation and others, see Haveman and Sexton (2008).

Table 5.2
Property Tax Share and Land Value Summary Statistics, 1977–2010

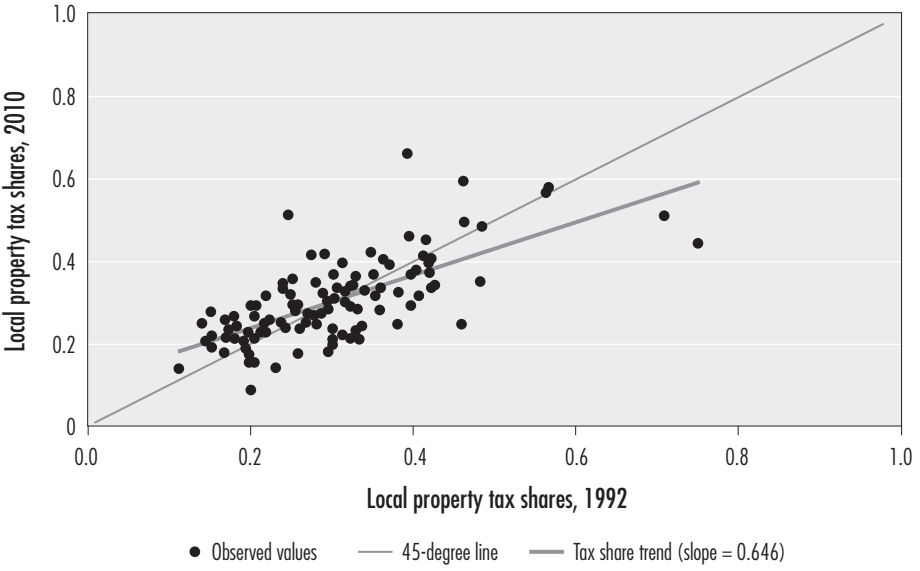
Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Local property tax share					
1977	112	52.4%	14.0%	18.6%	90.9%
1985	112	38.5%	12.3%	16.9%	79.7%
1992	112	41.0%	12.9%	15.0%	85.3%
2002	112	38.9%	12.9%	16.2%	79.2%
2010	112	41.2%	12.1%	15.8%	78.2%
State property tax share					
1992	114	43.7%	12.8%	11.2%	85.9%
2002	114	42.2%	11.8%	12.4%	83.8%
2010	114	44.8%	11.2%	20.8%	85.5%
Local land value					
1985	46	$108,697	$38,424	$57,797	$244,809
1992	46	$116,217	$57,218	$50,548	$317,608
2002	46	$147,116	$89,425	$58,007	$487,948
2010	46	$137,917	$83,594	$51,353	$409,994
State land value					
1977	114	$9,588	$11,768	$1,283	$34,552
1985	114	$11,585	$14,056	$1,345	$39,782
1992	114	$16,915	$22,589	$1,320	$65,603
2002	114	$26,546	$30,919	$2,488	$91,409
2010	114	$19,623	$25,021	$1,964	$136,933

Notes: "Local" and "state" imply measurement at the city and state level, respectively. State measurements are identical across cities in the same state. Local land values are in constant 1985 dollars; state land values are in constant 1977 dollars.
Source: Lincoln Institute of Land Policy (2014a, 2014b, 2014c).

the variance in land prices indicates that property taxes are no more or less variable than other local government revenue sources.

While table 5.2 examines the general time trends of urban property tax shares across all observations, figure 5.1 and table 5.3 track the observation-specific patterns of city property taxes. Figure 5.1 plots the local property tax shares of all cities in 1977 against those in 2010. Although the mean of the local shares differs by more than 10 percent across this time period, the scatterplot does not show any tendency for that change to be more dramatic across property tax receipt levels in either year. Overall, the time trend of the observations is strongly linear and not quite at the 45-degree line, which is consistent with the

Figure 5.1
Local Property Tax Shares, 1992 and 2010



Source: Lincoln Institute of Land Policy (2014a).

data in table 5.2 that indicate a gradual decline in property tax shares after 1977 but a relatively steady and small level of variance at a given cross-section.

Table 5.3 is a mobility matrix for local property tax observations in 1992 and 2010, where the shares are grouped by quintile to focus on more significant movements across this time period. Again there is evidence of significant "stickiness" in share values, as more than 45 percent of observations were located in the same quintile in both 1992 and 2010. The cities that displayed interquartile movement typically underwent modest shifts: 70 percent of cities located in different quintile bins in 1992 and 2010 shifted only one quintile, and no city moved either three or four quintiles.

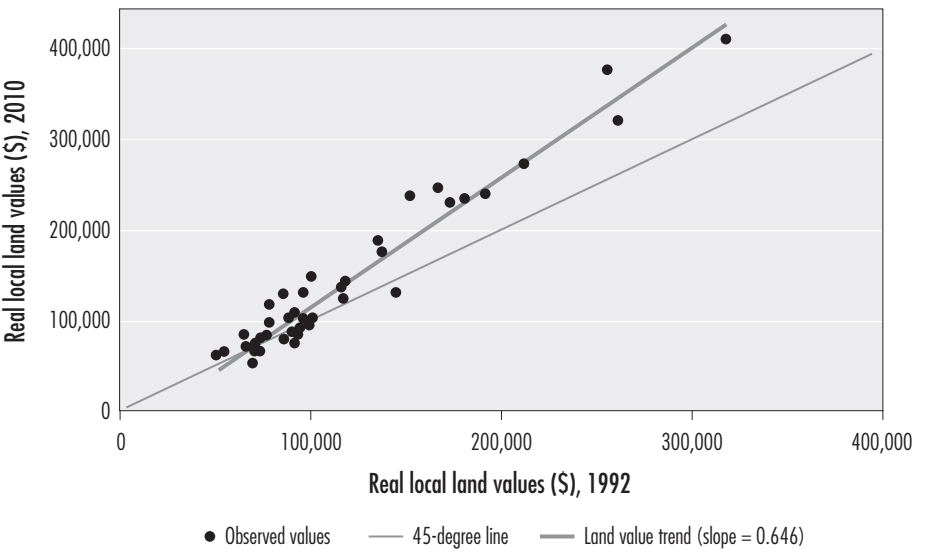
The summary statistics in table 5.2 indicate much more movement over time in the mean and variance of real land values than in those for property tax shares. Was this movement confined to a small set of observations, or was it characteristic of urban cities across the United States? Figure 5.2 maps the changes in local land values from 1992 to 2010 to help characterize these changes. The figure shows that just as with property tax shares, past local land values are highly predictive of present values for a given city. Cities on the lower or higher ends of the land value spectrum in 1985 were likely to occupy the same region in 2010. Moreover, there is an easily definable grouping of observations in both cross-sections.

Table 5.3
Mobility Matrix for Local Property Tax Observations, 1992 and 2010

	2010					
1992	Low Quintile	Second Quintile	Middle Quintile	Fourth Quintile	High Quintile	Total
Low Quintile	13	6	3	0	0	22
Second Quintile	6	8	5	3	0	22
Middle Quintile	3	5	6	5	3	22
Fourth Quintile	0	4	6	9	4	23
High Quintile	0	0	2	6	15	23
Total	22	23	22	23	22	112

Notes: Low quintile = cities with property tax share in the 0–20th percentiles; second quintile = 21st–40th percentiles; middle quintile = 41st–60th percentiles; fourth quintile = 61st–80th percentiles; high quintile = 81st–100th percentiles.
Source: Lincoln Institute of Land Policy (2014a).

Figure 5.2
Real Local Land Values, 1992 and 2010



Source: Lincoln Institute of Land Policy (2014b).

Table 5.4
Population of Cities in Sample by FiSC Category, 1992 and 2010

Year	Characteristic	Small	Medium	Large	Total
1992	Number	38	38	36	112
	Mean (thousands)	174	298	1,002	486
	Standard deviation (thousands)	20	63	127	805
	Typical observation	Modesto, CA	Mesa, AZ	San Antonio, TX	Denver, CO
2010	Number	37	38	37	112
	Mean (thousands)	186	331	1,113	546
	Standard deviation (thousands)	33	63	136	879
	Typical observation	Columbus, GA	Tampa, FL	Dallas, TX	Albuquerque, NM

Notes: Small = cities with population 200,000 or less in 1992 and 230,000 in 2010; medium = population more than 200,000 in 1992 and 230,000 in 2010 and 400,000 or less in 1992 and 450,000 in 2010; large = population more than 400,000 in 1992 and 450,000 in 2010. "Typical observation" is the city with the population closest to the mean in the given time period.
Source: Lincoln Institute of Land Policy (2014a).

With the exception of a few cities that displayed high land values in both years, the majority of observations were tightly clustered around land values of about $100,000 in 1992 and 2010.

Table 5.4 summarizes the population sizes of the cities in our sample in 1992 and 2010. The average city grew by about 60,000 people over these two decades, from 486,000 to 546,000 occupants. To provide further detail on how population size impacts other characteristics of these cities, observations are split into three roughly equal categories—small, medium, and large cities. Overall, the standard deviation of each set of observations roughly doubled moving from category to category.

The observations in each time period were ranked by their overall property tax shares and sorted into quintile categories in order to show how observations with high property tax shares differed from those with lower property tax shares. Tables 5.5 and 5.6 list the location, local property tax share, region, and size category of each observation in the highest and lowest property tax share quintiles, respectively.

Table 5.5 contains the descriptive characteristics of the highest property tax share quintile. The average property tax share was 60 percent in both 1992 and 2010, signaling that the lack of movement in mean property tax share values did not obfuscate any significant movement in this group of observations. Notably, the cities in table 5.5 were slightly more likely to have smaller populations in both years: twelve small, three medium, and seven large cities in 1992, and ten small, seven medium, and five large cities in 2010. Cities located in the West are underrepresented in this group, with only one entry in each year. Among

Table 5.5
Local Property Tax Shares of Highest-Value Cities, 1992 and 2010

1992						2010					
Rank	City	State	Share (%)	Region	Size	Rank	City	State	Share (%)	Region	Size
1	Warren	MI	85	MW	SM	1	Springfield	MA	78	NE	SM
2	Providence	RI	82	NE	SM	2	Boston	MA	73	NE	LG
3	Worcester	MA	71	NE	SM	3	Worcester	MA	72	NE	SM
4	Madison	WI	70	MW	SM	4	Madison	WI	70	MW	SM
5	Gary	IN	64	MW	SM	5	Providence	RI	67	NE	SM
6	Jackson	MS	62	SO	SM	6	Anchorage	AK	65	WE	MD
7	Indianapolis	IN	62	MW	LG	7	Jackson	MS	65	SO	SM
8	Boston	MA	62	NE	LG	8	Gary	IN	64	MW	SM
9	Arlington	TX	59	SO	MD	9	Warren	MI	61	MW	SM
10	Des Moines	IA	58	MW	SM	10	Durham	NC	58	SO	SM
11	Milwaukee	WI	58	MW	LG	11	Fort Wayne	IN	57	MW	MD
12	Fort Wayne	IN	57	MW	MD	12	Austin	TX	55	SO	LG
13	Springfield	MA	56	NE	SM	13	Fort Worth	TX	54	SO	LG
14	Portland	OR	55	WE	LG	14	Des Moines	IA	54	MW	SM
15	Fort Worth	TX	54	SO	LG	15	Milwaukee	WI	53	MW	LG
16	Omaha	NE	54	MW	MD	16	Virginia Beach	VA	53	SO	MD
17	Durham	NC	53	SO	SM	17	Lincoln	NE	52	MW	MD
18	Chesapeake	VA	53	SO	SM	18	Raleigh	NC	52	SO	MD
19	Greensboro	NC	53	SO	SM	19	Chesapeake	VA	52	SO	SM
20	Columbus	GA	53	SO	SM	20	Corpus Christi	TX	52	SO	MD
21	Dallas	TX	51	SO	LG	21	Houston	TX	52	SO	LG
22	Baltimore	MD	50	SO	LG	22	Greensboro	NC	51	SO	MD

Notes: Small = cities with population 200,000 or less in 1992 and 230,000 in 2010; medium = population more than 200,000 in 1992 and 230,000 in 2010 and 400,000 or less in 1992 and 450,000 in 2010; large = population more than 400,000 in 1992 and 450,000 in 2010. NE = Northeast; MW = Midwest; SO = South; WE = West; SM = small; MD = medium; LG = large.
Source: Lincoln Institute of Land Policy (2014a).

other things, this may be due to the increased number of tax limitations present in that region, including Proposition 13 in California and the Taxpayer Bill of Rights (TABOR) in Colorado. No other obvious regional patterns are evident in table 5.5. Although southern cities appear to have an above-average representation, this is likely the result of the large number of southern cities in the FiSC database.

Table 5.6
Local Property Tax Shares of Lowest-Value Cities, 1992 and 2010

1992						2010					
Rank	City	State	Share (%)	Region	Size	Rank	City	State	Share (%)	Region	Size
1	Mobile	AL	15	SO	SM	1	Flint	MI	16	MW	SM
2	Montgomery	AL	18	SO	SM	2	Mobile	AL	18	SO	SM
3	Baton Rouge	LA	21	SO	MD	3	Philadelphia	PA	20	NE	LG
4	Birmingham	AL	21	SO	MD	4	Colorado Springs	CO	23	WE	MD
5	Tulsa	OK	21	SO	MD	5	Denver	CO	24	WE	LG
6	Albuquerque	NM	23	WE	MD	6	St. Louis	MO	24	MW	MD
7	Oklahoma City	OK	24	SO	LG	7	Birmingham	AL	24	SO	SM
8	Louisville	KY	24	MW	MD	8	Montgomery	AL	25	SO	SM
9	St. Louis	MO	26	MW	MD	9	Cleveland	OH	25	MW	MD
10	Stockton	CA	26	WE	MD	10	Long Beach	CA	27	WE	LG
11	Philadelphia	PA	26	NE	LG	11	Little Rock	AR	28	SO	SM
12	Sacramento	CA	26	WE	LG	12	New Orleans	LA	28	SO	MD
13	Lexington	KY	26	MW	MD	13	Baton Rouge	LA	29	SO	MD
14	New Orleans	LA	27	SO	LG	14	Washington	DC	29	NE	LG
15	Spokane	WA	27	WE	SM	15	Chattanooga	TN	29	SO	SM
16	Chattanooga	TN	27	SO	SM	16	Charlotte	NC	29	SO	LG
17	Dayton	OH	27	MW	SM	17	Oklahoma City	OK	29	SO	LG
18	Modesto	CA	28	WE	SM	18	Dayton	OH	30	MW	SM
19	Seattle	WA	28	WE	LG	19	Buffalo	NY	30	NE	MD
20	Las Vegas	NV	28	WE	MD	20	Seattle	WA	30	WE	LG
21	Denver	CO	28	WE	LG	21	Spokane	WA	30	WE	SM
22	Kansas City	MO	29	MW	LG	22	Tacoma	WA	31	WE	SM

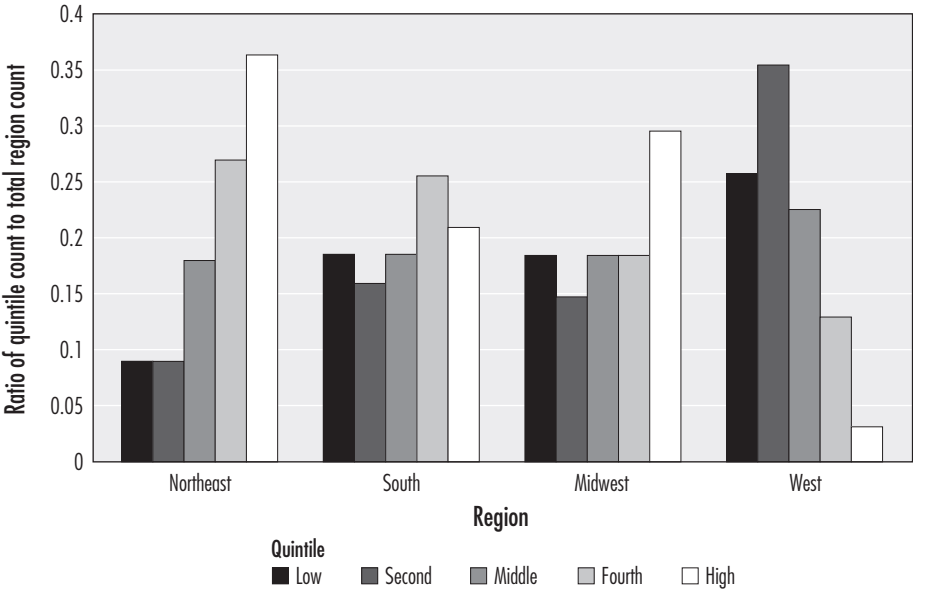
Notes: Small = cities with population 200,000 or less in 1992 and 230,000 in 2010; medium = population more than 200,000 in 1992 and 230,000 in 2010 and 400,000 or less in 1992 and 450,000 in 2010; large = population more than 400,000 in 1992 and 450,000 in 2010. NE = Northeast; MW = Midwest; SO = South; WE = West; SM = small; MD = medium; LG = large.
Source: Lincoln Institute of Land Policy (2014a).

Table 5.6 shows that the mean property tax share value in the lowest quintile also remained relatively steady over time, moving from 25 percent in 1992 to 26 percent in 2010. The lowest property tax share quintile does not exhibit any obvious tendencies by size (as were present in table 5.5); between six and nine observations in each size category are present in this quintile in both years.

Whereas cities in the West are underrepresented in table 5.5, their presence in table 5.6 is larger than their relative sampling would predict. This is consistent with the argument that property tax limitations have reduced tax revenues in the area. The nominal movement of shares by rank in both tables is very small, save for a small decrease in the tax receipts of cities with the very highest shares in table 5.5. Finally, both quintiles display significant levels of stickiness. Of the 22 observations in each group, 15 were present in the highest quintile in both years, and 13 were present in the lowest quintile in both years.

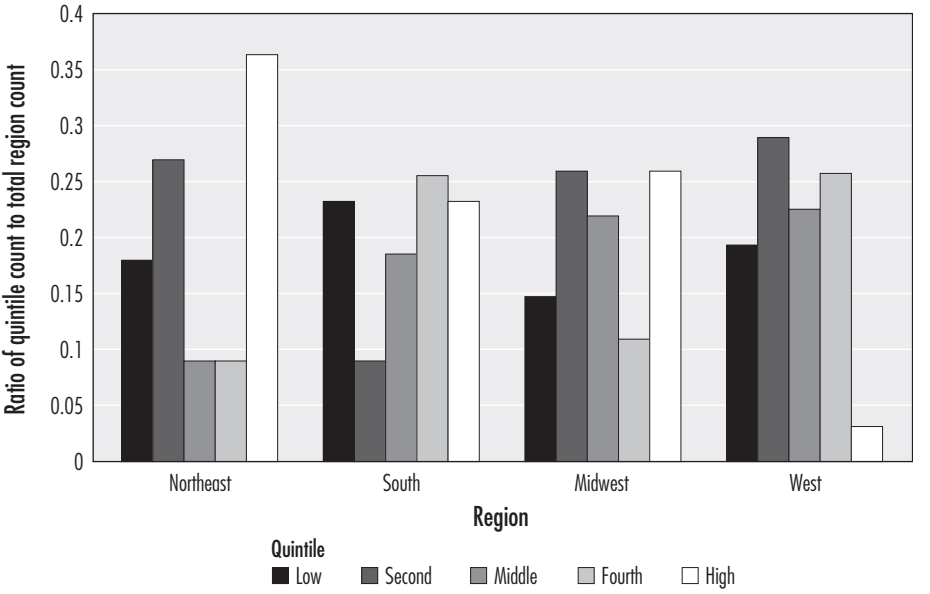
Figures 5.3 and 5.4 focus on the regional distinctions between property tax shares, tracking the within-region presence in each quintile for the Northeast, South, Midwest, and West in 1992 and 2010, respectively. Figure 5.3 displays strong tendencies toward high property tax shares in the Northeast in 1992, as observations in this region were more than three times as likely to be in the highest quintile as they were in either of the lowest two quintiles. Conversely, cities in the West skewed toward much lower property tax shares, with nearly 80 percent of these observations falling in the bottom three quintiles. The Midwest showed a slight tendency toward higher values, although it was not as pronounced as the trend in the Northeast. Observations in the South were spread relatively evenly across the quintiles.

Figure 5.3
Local Property Share Quintile Spread by Region, 1992



Source: Lincoln Institute of Land Policy (2014a).

Figure 5.4
Local Property Share Quintile Spread by Region, 2010



Source: Lincoln Institute of Land Policy (2014a).

The same analysis conducted for 2010 (figure 5.4) showed a few differences from 1992 (figure 5.3). While cities in the Northeast were still more likely than average to appear in the highest quintile, much of the concentration present in the middle and fourth quintiles in this region in 1992 shifted to the lowest two quintiles in 2010, which leaves the region with no clear property tax trend. Similarly, although western cities remained much less likely to have property tax shares in the highest two quintiles, the spread of observations in the other three quintiles in 2010 was much more even than it was in 1992. As in 1992, the 2010 observations in the South and Midwest showed no obvious trends in quintile distributions.

Table 5.7 provides a summary of property tax limitations by state for 2010.[6] Overall, there were 13 states with some form of tax rate limitation; 30 states with a local limitation; 37 states with an assessment limitation; and 13 states with a revenue limitation. All told, only five of the 50 states had none of the four property tax limitations written into law in 2010; three of these states were in the

6. This table is based on Haveman and Sexton (2008). A similar table for the year 2006 can be found in Anderson (2006).

Table 5.7
Property Tax Limitations by State, 2010

	Limitation					Limitation			
State	Tax Rate	Local	Assessment	Revenue	State	Tax Rate	Local	Assessment	Revenue
Alabama	Yes	Yes	No	No	Montana	No	Yes	Yes	No
Alaska	No	Yes	Yes	No	Nebraska	No	Yes	Yes	No
Arizona	Yes	No	Yes	Yes	Nevada	Yes	Yes	Yes	No
Arkansas	No	Yes	Yes	No	New Hampshire	No	No	No	No
California	Yes	No	No	Yes	New Jersey	No	No	Yes	No
Colorado	No	Yes	Yes	No	New Mexico	Yes	Yes	Yes	Yes
Connecticut	No	No	No	No	New York	No	Yes	No	Yes
Delaware	No	Yes	Yes	No	North Carolina	No	Yes	No	No
District of Columbia	Yes	No	Yes	Yes	North Dakota	No	Yes	Yes	No
Florida	No	Yes	No	Yes	Ohio	Yes	No	Yes	No
Georgia	No	Yes	No	Yes	Oklahoma	Yes	No	Yes	No
Hawaii	No	No	No	No	Oregon	Yes	No	Yes	No
Idaho	Yes	Yes	Yes	No	Pennsylvania	No	Yes	Yes	No
Illinois	No	Yes	Yes	No	Rhode Island	No	No	Yes	No
Indiana	No	No	Yes	No	South Carolina	No	No	Yes	Yes
Iowa	No	Yes	No	Yes	South Dakota	No	Yes	Yes	No
Kansas	No	No	Yes	No	Tennessee	No	No	No	No
Kentucky	No	Yes	Yes	No	Texas	No	Yes	Yes	Yes
Louisiana	No	Yes	Yes	No	Utah	No	Yes	Yes	No
Maine	No	No	Yes	Yes	Vermont	No	No	No	No
Maryland	No	No	No	Yes	Virginia	No	No	Yes	No
Massachusetts	No	Yes	Yes	No	Washington	Yes	Yes	Yes	No
Michigan	Yes	Yes	Yes	Yes	West Virginia	Yes	Yes	Yes	No
Minnesota	No	No	Yes	No	Wisconsin	No	Yes	Yes	No
Mississippi	No	No	Yes	No	Wyoming	No	Yes	No	No
Missouri	No	Yes	Yes	No					

Source: Lincoln Institute of Land Policy (2014a).

Northeast (Connecticut, New Hampshire, and Vermont), one was in the South (Tennessee), and one was in the West (Hawaii). Moreover, states with at least one property tax limitation were more likely than not to have multiple tax limitations; the average was more than two limitations per state. This factor highlights the importance of interactive limitation variables in the regression work that follows.

Table 5.8 summarizes the ratios of effective tax rates imposed on commercial, apartment, and homestead property in selected cities for the year 2012. Of these three types of property, homestead had the lowest tax rate and commercial had the highest: the average commercial-to-homestead ratio was 1.85, and the average apartment-to-homestead ratio was 1.49. Moreover, the variance among

Table 5.8
Ratios of Effective Tax Rates for Selected Cities, 2012

City	Commercial-to-Homestead	Apartment-to-Homestead	City	Commercial-to-Homestead	Apartment-to-Homestead
Anchorage, AK	1.069	1.069	Kansas City, MO	2.152	1
Birmingham, AL	2.105	2.105	Jackson, MS	1.754	1.754
Little Rock, AR	1.258	1.258	Charlotte, NC	1	1
Phoenix, AZ	2.566	1.214	Omaha, NE	1.01	1.01
Los Angeles, CA	1.024	1.024	Albuquerque, NM	1.082	1.041
Denver, CO	3.538	0.997	Las Vegas, NV	0.986	0.977
Washington, DC	2.412	1.243	Buffalo, NY	1.691	1.691
Jacksonville, FL	1.403	1.403	New York, NY	5.969	6.19
Atlanta, GA	2.507	2.507	Columbus, OH	1.346	1.346
Des Moines, IA	2.045	2.045	Oklahoma City, OK	1.067	1.067
Chicago, IL	2.96	1.15	Portland, OR	1	1.046
Indianapolis, IN	2.962	2.962	Philadelphia, PA	1.49	1.49
Wichita, KS	2.105	1.023	Providence, RI	2.305	2
Louisville, KY	0.956	0.956	Memphis, TN	1.6	1.6
New Orleans, LA	2.578	1.788	Houston, TX	1.255	1.337
Boston, MA	3.931	1.643	Salt Lake City, UT	1.849	1.017
Baltimore, MD	1.104	1.104	Virginia Beach, VA	0.956	0.956
Detroit, MI	1.258	1.265	Seattle, WA	1	1
Minneapolis, MN	2.007	1.434	Milwaukee, WI	1.034	1.032

Notes: The commercial-to-homestead ratio equals the effective tax rate on commercial properties divided by that on homestead properties. The apartment-to-homestead ratio equals the effective tax rate on apartment properties divided by that on homestead properties.
Source: Lincoln Institute of Land Policy and Minnesota Center for Fiscal Excellence (2013).

these values was relatively small, as the vast majority of ratios were between 1 and 3. The cities falling outside this range tended to be larger and have higher ratios: for instance, both ratios were about 6 in New York City. Finally, a number of jurisdictions taxed these types of property at the same rate.

Regression Analysis

The descriptive look at property tax shares in this study revealed considerable persistence and stickiness over time, both within and across observations. There are two different economic models that could deliver such results.

The first model assumes that local jurisdictions have the capacity to adjust their property tax shares over time. They may decide, for example, on their desired spending levels and then, taking into account their tax base, calculate the appropriate property tax rate. In Sheffrin (2013), this is called a *revenue-based property tax system*, in that property tax rates are adjusted primarily to meet revenue targets. One would expect adjustments to be slow, as the political system may restrict the speed with which property tax rates can be changed. From an econometric point of view, this would be best modeled as a traditional lagged adjustment model, with the lagged property tax share on the right-hand side of the equation along with the determinants of the desired property tax share. The speed of adjustment would be determined by the coefficient on the lagged property tax share, with coefficients closer to one indicating greater tax stickiness and therefore lower adjustment speeds. This finding would be consistent with the descriptive statistics found in this study.

The second model assumes that pervasive tax limitations (legal, political, or other) make it extremely difficult or even effectively impossible to change tax rates. California's Proposition 13 is an extreme example of this model at work. In this model, revenue from the property tax is tied to the property tax base. In Sheffrin (2013), this is called a *rate-based property tax system*. From an econometric standpoint, this would be best modeled by cross-sectional regressions that take into account characteristics such as the presence of property tax limitations and other relevant variables.

Results from both approaches are presented in this section. This study also examined a set of probit models in which the determinants of high- and low-property-tax-share cities were studied in the cross-section. These results did not differ from the cross-sectional analysis and are not reported here.

PARTIAL ADJUSTMENT MODELS

Table 5.9 presents the results of regressions on lagged property tax shares as well as regional effects. The lagged property tax values proved to be positive and significant, with an increasing effect on current levels as the time difference decreased. The coefficients of these variables were consistently just under one, indicating that observations tended to have relatively constant property tax values even when regional effects were accounted for. The lagged effects showed remarkable

Table 5.9
Lagged Linear Regressions on Local Property Tax Share: Part 1, 2010

	(1)	(2)	(3)	(4)	(5)	(6)
Local property tax share						
1977	0.541***					
	(7.404)					
1992		0.656***				
		(9.073)				
2002			0.800***			
			(13.90)			
State property tax share						
2002				0.734***		
				(6.898)		
2010					0.720***	0.637***
					(6.408)	(5.832)
Northeast dummy	0.0107	0.00658	–0.00982	–0.00905	–0.00316	0.00963
	(0.296)	(0.204)	(–0.407)	(–0.239)	(–0.0811)	(0.248)
South dummy	0.0643*	0.0457	0.0181	0.0709*	0.0573*	0.0385
	(2.492)	(1.986)	(1.050)	(2.645)	(2.085)	(1.470)
West dummy	–0.0228	0.0249	0.0266	0.0690*	0.0508	0.0334
	(–0.833)	(1.019)	(1.463)	(2.339)	(1.706)	(1.158)
Metropolitan statistical area (MSA) employment-to-population ratio, 2010	0.00121	0.000437	–0.00329	–0.00101	0.000943	
	(0.464)	(0.186)	(–1.828)	(–0.367)	(0.337)	
Actual-to-fiscalized-city-tax ratio, 2010	–0.00531	0.0314	0.0234	–0.0604	–0.0636	0.0244
	(–0.0994)	(0.652)	(0.654)	(–1.088)	(–1.108)	(0.454)
Constant	0.0272	0.0653	0.264*	0.137	0.0157	0.0886
	(0.166)	(0.448)	(2.436)	(0.820)	(0.0897)	(1.451)
Number of observations	64	64	64	64	64	110
Adjusted R^2	0.473	0.577	0.764	0.436	0.399	0.248

Note: T-statistics appear in parentheses.
*, **, *** = statistically significant at <0.05, <0.001, and <0.001 levels.
Source: Lincoln Institute of Land Policy (2014a, 2014b).

persistence, consistent with the data in figure 5.1. For example, in column 2 the coefficient on the 1992 local share is 0.656. Since this observation was 18 years from the dependent variable (2010 tax share), this indicates that the implied yearly coefficient in an autoregressive representation would be 0.976, only a 2.4 percent decay rate per year. Using the value in column 3 for the coefficient in 2002 (0.800) resulted in an almost identical result. State lagged property tax shares also have significant explanatory power, indicating that either statewide laws or state-specific characteristics drive city results.

The regional differences in table 5.9 were significant or close to significant in all specifications for the South dummy variables. The positive coefficients relate to how the property tax shares differed from those in the Midwest, which was the base case. This suggests that cities in the South have increased their property tax shares relative to cities in the Midwest in recent years. The presence of significant regional effects could stem from a couple of different factors. One potential explanatory factor is the regional profiles of other taxes: if cities in the South tend to have, say, lower sales taxes than those in other regions, they may increase revenue from other sources, including property taxes. Property tax limitations also may drive this result. These relationships were explored in later regressions.

An extensive analysis of the effects of land prices on property tax shares was conducted. None of the land price measures proved significant in any of the regressions. As the summary statistics indicate, property tax share remained relatively level, while land values increased, suggesting that this channel may not have been operating. The regressions confirmed this. In principle, a number of offsetting mechanisms could break the link between land values and property tax shares across cities. Neither the metropolitan statistical area (MSA) employment-to-population measures (available for a subset of cities) nor the actual-to-fiscalized-city-tax ratio variables were statistically significant or stable across our specifications. In principle, land prices, employment measures, and fiscal centralization could all affect property tax share, but no significant effects were found.

CROSS-SECTIONAL LINEAR REGRESSIONS

The cross-sectional analysis tested for the effect of regional variables, land values, and other taxes and grants on the variation of the 2010 property tax shares across observations. Unlike the regressions in the previous section, these regressions tested for the impact of tax limitations and classification ratios on the dependent variable.[7] Interactive variables for the tax limitation variables were included

7. Tax limitation variables were excluded from the previous section because the presence of limitations remained relatively constant over the time period for which data were available in this sample. Regressions to test for the effect of tax limitations and classification ratios on the dependent variable were performed, but the standard errors were too large to reveal anything meaningful about the underlying relationship. Since effective tax rates were available for only one time period, these variables also were excluded from the previous set of regressions.

to test for the presence of a nonlinear relationship between tax limitations and overall tax share.

In theory, property tax limitations inherently restrict the amount of money available to governments and should thus have a clear and negative impact on an observation's overall tax share, leading to negative coefficients for these variables. This hypothesis assumes that property tax limitations are effective in reducing such levies. In cross-sectional regressions, however, causal interpretations may be problematic. If limitations are in fact ineffective in reducing collections, the relationship between limitations and tax share may even be positive, since the presence of restrictions could serve as a signal that tax share was relatively high to begin with.

Tables 5.10a and 5.10b display the results of regressions that included both the variables in Table 5.9 and property tax limitations. These results show that tax rate limitations (typically imposed at the state level) significantly reduce urban property tax share, while local or levy limitations have a smaller but still notable effect in the same direction. Tax rate limitations, through a cap of the overall tax rate, perhaps represent the most direct form of property tax limitation, which is consistent with this type of restriction having the largest effect on property tax share. As local limitations can vary by type, as well as by the type of jurisdiction in which they are effective, it may be that the significant result for local limitations may vary across the states. Other tax limitations seem to have little or no effect on property tax share, although the fact that these limitation types are used less frequently makes it difficult to isolate their effects.

The local sales tax share had a consistently negative effect on the property tax share, while the intergovernmental transfer variable produced positive and significant coefficients. The negative effect on the sales tax share was not unexpected, but causal interpretations are difficult to disentangle. Do localities that willingly choose higher sales taxes also deliberately reduce their property tax share? Or do localities that are severely constrained through property tax limitations compensate by raising their sale taxes? The positive coefficient on the intergovernmental share is intriguing and does *not* suggest that increased intergovernmental grants allow localities to lower their property taxes. This would be the case if there were fixed revenue targets and intergovernmental grants were exogenous. One plausible explanation for the result in this study may be that states are willing to match individual cities' efforts to increase revenue in order to induce more fiscal effort from local governments. Thus, cities that increase property taxes may be able to count on additional matching support from the state. At the minimum, the results in this study suggest that there may be some complex political interactions between state governments and cities; as a consequence, we should be careful in interpreting causal results in a cross-section.

Tables 5.11a and 5.11b display the results of regressions with the independent variable set expanded to include both the limitation interactive variables and the effective tax rates. The impact of effective tax rates could potentially be in either direction. A positive effect would indicate that preferential treatment for

Table 5.10a
Linear Regressions on Local Property Tax Share: Part 2, 2010

	(1)	(2)	(3)	(4)	(5)	(6)
State land value, 2010	–6.75e-07 (–0.82)	–6.32e-07 (–0.79)	–6.60e-07 (–0.93)	–6.16e-07 (–0.90)	–1.08e-04 (–0.978)	
Percentage of state land growth, 1992–2010						–5.43e-05 (–0.66)
Northeast dummy	0.0547 (1.16)	0.00175 (0.03)	0.0950* (2.29)	0.0416 (0.95)	0.0710 (1.280)	0.0312 (0.73)
South dummy	–0.00104 (–0.03)	0.0114 (0.34)	0.0775* (2.37)	0.0903** (2.83)	0.0811 (1.663)	0.0873** (2.77)
West dummy	0.0204 (0.50)	0.0289 (0.72)	0.0703 (1.92)	0.0789* (2.23)	0.0690 (1.368)	0.0795* (2.16)
Tax rate limitation, 2010	–0.11*** (–3.57)	–0.13*** (–4.05)	–0.068* (–2.38)	–0.083** (–2.94)	–0.077 (–1.762)	–0.089** (–3.20)
Local limitation, 2010	–0.0629* (–2.36)	–0.0515 (–1.95)	–0.0296 (–1.24)	–0.0181 (–0.77)	–0.0507 (–1.406)	–0.00984 (–0.44)
Revenue limitation, 2010	0.0391 (1.36)	0.0390 (1.39)	0.0294 (1.18)	0.0293 (1.22)	0.0632 (1.787)	0.0311 (1.30)
Assessment limitation, 2010	0.0413 (1.58)	0.0367 (1.43)	0.000108 (0.00)	–0.00463 (–0.20)	0.0480 (1.299)	–0.0152 (–0.62)
Local intergovernmental share, 2010		0.103* (2.47)		0.104** (2.90)	0.0181 (0.269)	0.106** (2.93)
Local sales tax share, 2010			–0.75*** (–5.86)	–0.75*** (–6.09)	–0.346* (–2.504)	–0.77*** (–6.10)
Metropolitan statistical area (MSA) employment-to-population ratio, 2010					0.00118 (0.243)	
Actual-to-fiscalized-city-tax ratio, 2010					–0.0635 (–0.785)	
Constant	0.444*** (10.47)	0.374*** (7.45)	0.486*** (12.96)	0.416*** (9.53)	0.368 (1.142)	0.417*** (9.46)
Number of observations	112	112	112	112	64	112
Adjusted R^2	0.007	0.123	0.165	0.339	0.148	0.382

Note: T-statistics appear in parentheses.
*, **, *** = statistically significant at <0.05, <0.01, and <0.001 levels.
Source: Lincoln Institute of Land Policy (2014a).

Table 5.10b
Linear Regressions on Local Property Tax Share: Part 2, 2010

	(7)	(8)	(9)	(10)	(11)	(12)
Northeast dummy	0.0437	–0.00893	0.0842*	0.0313	0.0313	0.0647
	(0.97)	(–0.18)	(2.12)	(0.74)	(0.74)	(1.176)
South dummy	–0.00950	0.00357	0.0693*	0.0827**	0.0827**	0.0630
	(–0.29)	(0.11)	(2.20)	(2.69)	(2.69)	(1.397)
West dummy	0.0109	0.0200	0.0610	0.0703*	0.0703*	0.0484
	(0.28)	(0.52)	(1.73)	(2.06)	(2.06)	(1.057)
Tax rate limitation, 2010	–0.12***	–0.13***	–0.074*	–0.088**	–0.088**	–0.081
	(–3.83)	(–4.31)	(–2.62)	(–3.19)	(–3.19)	(–1.857)
Local limitation, 2010	–0.0562*	–0.0452	–0.0230	–0.0119	–0.0119	–0.0597
	(–2.22)	(–1.80)	(–1.01)	(–0.53)	(–0.53)	(–1.711)
Revenue limitation, 2010	0.0416	0.0414	0.0319	0.0316	0.0316	0.0599
	(1.46)	(1.49)	(1.29)	(1.32)	(1.32)	(1.703)
Assessment limitation, 2010	0.0367	0.0323	–0.00447	–0.00893	–0.00893	0.0639
	(1.44)	(1.30)	(–0.19)	(–0.40)	(–0.40)	(1.925)
Local intergovernmental share, 2010		0.104*		0.105**	0.105**	0.00839
		(2.49)		(2.93)	(2.93)	(0.126)
Local sales tax share, 2010			–0.75***	–0.75***	–0.75***	–0.307*
			(–5.87)	(–6.09)	(–6.09)	(–2.322)
Metropolitan statistical area (MSA) employment-to-population ratio, 2010						0.000144
						(0.0303)
Actual-to-fiscalized-city-tax ratio, 2010						–0.0513
						(–0.642)
Constant	0.441***	0.371***	0.483***	0.413***	0.413***	0.427
	(10.45)	(7.43)	(12.94)	(9.50)	(9.50)	(1.352)
Number of observations	112	112	112	112	112	64
Adjusted R^2	0.126	0.168	0.340	0.385	0.385	0.148

Note: T-statistics appear in parentheses.
*, **, *** = statistically significant at <0.05, <0.01, and <0.001 levels.
Source: Lincoln Institute of Land Policy (2014a).

homestead property increased property tax shares, signaling perhaps a reduced inelasticity on the part of businesses and apartment dwellers to mobilize in response to increased taxation; a negative effect would signal that relatively preferential policies for businesses led to higher property tax shares. Since assessment and revenue limitations proved insignificant in previous regressions, these factors were combined into a single "Other limitation" variable for this set of specifications.

The results of the regressions in tables 5.11a and 5.11b largely mirror those found in the earlier work. The tax limitation variables were again negative and significant for tax rate and local limitations and insignificant for all other factors, including the interactive items. The effective tax rate variables returned coefficients that were statistically insignificant and very close to zero, signaling that preferential treatment for a particular type of property does not result in

Table 5.11a
Dependent Variable: Local Property Tax Share, 2010

	(1)	(2)	(3)	(4)	(5)	(6)
State land value, 2010	–4.5 e-07	–1.0 e-06	–6.8 e-07	–7.0 e-07	–7.8 e-07	–7.8 e-07
	(–0.80)	(–1.66)	(–1.15)	(–1.19)	(–1.25)	(–1.197)
Northeast dummy	–0.00478	0.0627	0.00974	0.0106	0.00888	0.0775
	(–0.11)	(1.35)	(0.21)	(0.23)	(0.19)	(1.365)
South dummy	0.0528	0.0840*	0.0555	0.0596	0.0596	0.105*
	(1.66)	(2.53)	(1.74)	(1.78)	(1.78)	(2.431)
West dummy	0.0696	0.0466	0.0761	0.0759	0.0762	0.0859
	(1.82)	(1.16)	(1.98)	(1.97)	(1.97)	(1.833)
Local intergovernmental share, 2010	0.119**	0.0829*	0.111**	0.111**	0.112**	0.0254
	(3.06)	(2.01)	(2.82)	(2.81)	(2.82)	(0.382)
Local sales tax share, 2010	–0.364***	–0.394***	–0.349***	–0.343***	–0.346***	–0.352**
	(–3.94)	(–4.00)	(–3.76)	(–3.65)	(–3.65)	(–2.704)
Tax rate limitation, 2010	–0.107***		–0.114***	–0.112***	–0.102*	–0.0914
	(–3.78)		(–3.97)	(–3.88)	(–2.54)	(–1.755)
Local limitation, 2010		–0.0125	–0.0314	–0.0321	–0.0246	–0.0805
		(–0.49)	(–1.29)	(–1.31)	(–0.79)	(–1.821)
Other limitation, 2010				0.0158	0.0119	0.0906
				(0.42)	(0.31)	(1.596)
Tax rate–local limitation interactive, 2010					–0.02	0.0724
					(–0.39)	(1.122)

(continued)

Table 5.11a *(continued)*

	(1)	(2)	(3)	(4)	(5)	(6)
Metropolitan statistical area (MSA) employment-to-population ratio, 2010						0.00164 (0.397)
Actual-to-fiscalized-city-tax ratio, 2010						–0.0939 (–1.251)
Constant	0.422*** (12.09)	0.420*** (10.16)	0.446*** (11.37)	0.429*** (7.69)	0.427*** (7.61)	0.341 (1.170)
Number of observations	112	112	112	112	112	64
Adjusted R^2	0.252	0.151	0.257	0.251	0.245	0.127

Note: T-statistics appear in parentheses.
*, **, *** = statistically significant at <0.05, <0.01, and <0.001 levels.
Source: Lincoln Institute of Land Policy (2014a).

Table 5.11b
Dependent Variable: Local Property Tax Share, 2010

	(7)	(8)	(9)	(10)	(11)
State land value, 2010	–7.8 e-07 (–1.23)	–7.8 e-07 (–1.23)	–9.4 e-07 (–1.61)	–8.2 e-07 (–1.29)	–7.0 e-07 (–1.067)
Northeast dummy	0.0175 (0.38)	0.0175 (0.38)	0.053 (1.21)	0.0115 (0.25)	0.0733 (1.286)
South dummy	0.0598 (1.78)	0.0598 (1.78)	0.0769* (2.28)	0.043 (1.21)	0.110* (2.545)
West dummy	0.0736 (1.84)	0.0736 (1.84)	0.0441 (1.1)	0.0813* (2.02)	0.0827 (1.745)
Local intergovernmental share, 2010	0.105* (2.61)	0.105* (2.61)	0.0815* (1.98)	0.0919* (2.22)	0.0367 (0.546)
Local sales tax share, 2010	–0.320** (–3.26)	–0.320** (–3.26)	–0.378*** (–3.68)	–0.284** (–2.80)	–0.401** (–2.938)
Tax rate limitation, 2010	–0.202* (–1.99)	–0.109* (–2.62)		–0.166 (–1.59)	–0.0103 (–0.0643)
Local limitation, 2010	0.0543 (0.72)	0.0543 (0.72)		0.0356 (0.47)	–0.232 (–1.916)

(continued)

Table 5.11b *(continued)*

	(7)	(8)	(9)	(10)	(11)
Other limitation, 2010	0.0553 (0.87)	0.0553 (0.87)		0.0494 (0.78)	0.00504 (0.0609)
Tax rate–local limitation interactive, 2010	0.00373 (0.07)	–0.0892 (–0.97)		0.00703 (0.13)	0.0559 (0.825)
Tax rate–other limitation interactive, 2010	0.0929 (0.98)			0.0367 (0.36)	–0.0564 (–0.371)
Local–other limitation interactive, 2010	–0.0955 (–1.14)	–0.0955 (–1.14)		–0.0891 (–1.06)	0.180 (1.367)
All limitation interactive, 2010		0.0929 (0.98)			
Homestead-to-commercial assessment ratio, 2010			0.04 (0.69)	0.0895 (1.37)	
Homestead-to-apartment assessment ratio, 2010			0.02 (0.34)	–0.05 (0.73)	
Metropolitan statistical area (MSA) employment-to-population ratio, 2010					0.00283 (0.670)
Actual-to-fiscalized-city-tax ratio, 2010					–0.0854 (–1.120)
Constant	0.393*** (5.91)	0.393*** (5.91)	0.376*** (6.05)	0.338*** (4.35)	0.328 (1.123)
Number of observations	112	112	112	112	64
Adjusted R^2	0.242	0.242	0.153	0.248	0.129

Note: T-statistics appear in parentheses.
*, **, *** = statistically significant at <0.05, <0.01, and <0.001 levels.
Source: Lincoln Institute of Land Policy (2014a).

changes in overall property tax share. The effect of intergovernmental transfers was still positive, and the sales tax variable was again negative. Neither the MSA employment-to-population ratio nor the degree of fiscal centralization was statistically significant.

ALTERNATIVE SPECIFICATION: OWN-SOURCE REVENUE CALCULATION

All of the preceding empirical specifications used a measure of own-source revenue that included receipts from property taxes, sales taxes, individual income taxes, and corporate income taxes. However, the definition of own-source revenue

Table 5.12
Source Detail on the Definitions of Own-Source Revenue

Revenue Source	In "Main" Definition?	In "Fee" Definition?
Property taxes	Yes	Yes
General sales taxes	Yes	Yes
Selective sales taxes	Yes	Yes
Intergovernmental transfers	No	No
Individual income taxes	Yes	Yes
Corporate income taxes	Yes	Yes
Other taxes	No	Yes
Current user charges[a]	No	Yes
Miscellaneous fees[b]	No	Yes
Utilities[c]	No	No
Liquor store sales	No	No
Employee retirement trusts	No	No

[a] Includes charges devoted to education, healthcare, highways, transportation, natural resources, waste management, and parks and recreation.
[b] Includes fees on interest earnings and property sales; special assessments; and other general revenue fees.
[c] Includes water supply, electricity, gas supply, and transit.
Source: Lincoln Institute of Land Policy (2014a).

may vary. Specifically, the interpretation in this study excluded a number of user charges and fees that accrue to localities but that might be legislated by different levels of government. Such receipts could include charges devoted to education, healthcare, and transportation; fees on interest earnings and property sales; and special assessments. To ensure that the results were not driven by the exclusion of these variables, regressions were also run with a more inclusive definition of own-source revenue. Table 5.12 summarizes the differences between the "main" and "fee" definitions. Overall, the results with the more inclusive measure were strikingly similar to those presented here. There were only two minor differences. The coefficients on lagged property tax shares were slightly lower (around 0.50 as compared with 0.65 in table 5.9), and the coefficient on intergovernmental transfers was still positive but now carries statistical significance.

Conclusions

The empirical analysis demonstrated that property tax revenue share was not related to changes in land prices, but it was related to non–property tax revenue

and to tax rate and local limitations. Additionally, although we did not find any significant effects from our effective tax rate measures, it remains the case that increasing the relative taxation on business property is a potential source of additional revenue. These two factors were used to explore the potential scope of increased revenue for low-property-tax-share cities, which may have the greatest potential for revenue increases.

Table 5.13 displays the share percentage indicators for whether the cities with the 40 lowest property tax shares in our sample have preferential tax policies toward residential property and whether they have tax rate or local limitations. The "classification preferences" column identifies cities that impose *lower* tax rates on residential property than on commercial and other nonresidential property. Overall, 12 of the 40 cities have such preferences; this percentage is not significantly different from that in the entire sample, where 26 of the 112 cities have differential treatment.

Table 5.13 also indicates the presence of the two tax limitations that were significant in our regressions: tax rate and local limitations. Almost all of the cities in this table impose at least one property tax limitation (the only exceptions being Chattanooga, Tennessee; Kansas City, Missouri; and Norfolk, Virginia), while 10 impose both tax rate and local limitations. Only 13 of the 112 cities in the entire sample impose both types of limitations. Thus, although there might be some opportunity for increased revenue from changes in classification, virtually all of the lowest-property-tax cities face important statutory restrictions regarding increased property taxation.

With a relatively small fraction of cities classifying property, there is the potential for increased revenue by changing property tax statutes (and typically state constitutions) to allow for higher levels of taxation for, say, commercial and industrial property. In most cities, that would be a substantial portion of the property tax roll. In San Francisco, for example, the share of commercial and industrial property narrowly defined is about 30 percent, and other cities are likely to have similar percentages (California State Board of Equalization 2014). If large multifamily rental property and other non-single-family categories were included in a classification scheme, the percentages would rise.

The politics of classification can be treacherous, however. In California, reformers have sought unsuccessfully to date to remove the assessment increase limitations of Proposition 13 from commercial and industrial property and thus tax it at its true market value. Depending on the state of the property market at the time of a change, the increase in assessments could run anywhere from 15 to 35 percent in a typical urban county such as Los Angeles. Opponents have successfully portrayed this as an antibusiness maneuver and a wedge to initiate the erosion of the homeowner protections in Proposition 13. Other states with strong protections for homeowners, however, have managed to adopt classification schemes into their constitutions and tax commercial and industrial property at higher rates.

Another trend leading to more property tax revenue may be greater urban density. A story in the *Wall Street Journal* reported on the growing number of

Table 5.13
Tax Classification Preferences and Limitations of the Lowest-Value Cities, 2010

Rank	City	State	Property Tax Share (%)	Region	Size	Classification Preferences?	Limitations?
1	Flint	MI	9	MW	SM		††
2	Mobile	AL	14	SO	SM	*	††
3	Colorado Springs	CO	14	WE	MD	*	†
4	Denver	CO	15	WE	LG	*	†
5	Philadelphia	PA	15	NE	LG		†
6	Long Beach	CA	17	WE	LG		†
7	Cleveland	OH	18	MW	MD		†
8	Chattanooga	TN	18	SO	SM	*	
9	St. Louis	MO	18	MW	MD	*	†
10	Charlotte	NC	18	SO	LG		†
11	Birmingham	AL	19	SO	SM	*	††
12	Little Rock	AR	19	SO	SM		†
13	New Orleans	LA	20	SO	MD		†
14	Montgomery	AL	20	SO	SM	*	††
15	Dayton	OH	21	MW	SM		†
16	Spokane	WA	21	WE	SM		††
17	Buffalo	NY	21	NE	MD		†
18	Tacoma	WA	21	WE	SM		††
19	Seattle	WA	21	WE	LG		††
20	Oklahoma City	OK	21	SO	LG	*	†
21	Lubbock	TX	21	SO	SM		†
22	Syracuse	NY	21	NE	SM		†
23	Baton Rouge	LA	22	SO	MD		†
24	Detroit	MI	22	MW	LG		††
25	Kansas City	MO	23	MW	SM	*	
26	Oakland	CA	23	WE	MD		†
27	Pittsburgh	PA	23	NE	MD		†
28	Modesto	CA	23	WE	SM		†
29	Norfolk	VA	23	SO	MD		
30	Sacramento	CA	23	WE	LG		†
31	Salt Lake City	UT	24	WE	SM	*	†

(continued)

Table 5.13 *(continued)*

Rank	City	State	Property Tax Share (%)	Region	Size	Classification Preferences?	Limitations?
32	Washington	DC	24	NE	LG	*	†
33	Anaheim	CA	24	WE	MD		†
34	Toledo	OH	24	MW	MD		†
35	Las Vegas	NV	24	WE	LG		††
36	Grand Rapids	MI	24	MW	SM		††
37	Arlington	TX	25	SO	MD		†
38	Los Angeles	CA	25	WE	LG		†
39	Chicago	IL	25	MW	LG		†
40	Tulsa	OK	25	SO	MD	*	†

Notes: NE = Northeast; MW = Midwest; SO = South; WE = West; SM = small; MD = medium; LG = large.
* = city has preferential tax policies toward residential properties; † = city has tax rate limitations or local limitations; †† = city has both tax rate limitations and local limitations.
Source: Lincoln Institute of Land Policy (2014a).

high-rise buildings in Minneapolis, which some have called the "Manhattanization" of America (Dougherty 2014). To the extent that demographic changes lead to population growth in cities and greater density, the share of property tax revenue is likely to grow as well. However, even with this development, there are potential offsetting factors, such as abatements offered to owners to renovate older buildings or convert them to residential use. For example, while there has been a rise in new condo developments in underutilized buildings in downtown Brooklyn, New York, there has also been an extensive use of generous abatements, often extending for 20 years. These abatements typically offset virtually all increases in property tax bills. What the population influx giveth, the abatements taketh away.

In an earlier prognostication of the future of the property tax, Sheffrin (1998) opined that as equity considerations and lawsuits continued to centralize education finance at the state level, the local property tax would continue to lose favor, as voters cared more about education than for other uses of property tax revenue. Nonetheless, the property tax would persist and grow in dollar terms, if not in the share of own-source revenue. In fact, the property tax has a robust and largely immovable base, and other local taxes (e.g., sales taxes) face their own challenges. The current study essentially confirms these conjectures. Since the last great wave of property tax revolts in the late 1970s, property tax shares in urban settings simply have not changed very much. Tax limitations and homeowners' desire to protect themselves from tax increases place sharp limits on local authorities.

Increased use of classification schemes and greater density in urban areas may provide some avenues for increases in the property tax share of own-source revenue, but these channels face their own obstacles.

The stability in the property tax share indicates that property tax revenue has kept pace with overall revenue and with the substantial growth of cities over the past several decades. The current study does not suggest much potential for increasing its share of total revenue, however. In the event of greater expenditure requirements or revenue shortfalls, cities are more likely to turn to increased sales taxes, intergovernmental transfers, or user charges than to increased property taxes.

REFERENCES

Anderson, N. B. 2006. "Property Tax Limitations: An Interpretative Review." *National Tax Journal* 59(3): 685–694.

Bridges, T. 2014a. "Landrieu Looking for Three Taxes to Pay for Decrees, Pensions." *The Lens* (April 14). *http://thelensnola.org/2014/04/14/landrieu-looking-for-three-tax-increases-to-pay-for-consent-decrees-pensions/*.

———. 2014b. "Landrieu Seeks Special Riverfront Tax District to Pay for Decrees and Pensions." *The Lens* (April 23). *http://thelensnola.org/2014/04/23/landrieu-seeks-special-riverfront-tax-district-to-pay-for-decrees-and-pensions/*.

Bureau of Labor Statistics. 2014. "Local Area Unemployment Statistics." *www.bls.gov/lau/metrossa.htm*.

California State Board of Equalization. 2014. "A Report on Budget, Workloads, and Assessment Appeals Activities in California Assessors' Offices 2012–13." Sacramento (January 6). *www.boe.ca.gov/proptaxes/pdf/lta14003.pdf*.

Davis, M. A., and J. Heathcote. 2007. "The Price and Quantity of Residential Land in the United States." *Journal of Monetary Economics* 54(8): 2595–2620.

Davis, M. A., and M. G. Palumbo. 2007. "The Price of Residential Land in Large U.S. Cities." *Journal of Urban Economics* 63(1): 352–384.

Dougherty, C. 2014. "High-Rise Apartment Buildings Sprout in Downtown Nationwide." *Wall Street Journal*, April 25. *http://online.wsj.com/news/articles/SB10001424052702304049904579517890655620418*.

Dresch, M., and S. Sheffrin. 1997. "Who Pays for Development Fees and Exactions?" San Francisco: Public Policy Institute of California (June).

Haveman, M., and T. A. Sexton. 2008. *Property Tax Assessment Limits: Lessons from Thirty Years of Experience*. Policy focus report. Cambridge, MA: Lincoln Institute of Land Policy (June).

Lincoln Institute of Land Policy. 2014a. "Explanation of Fiscally Standardized Cities." Fiscally Standardized Cities. *www.lincolninst.edu/subcenters/fiscally-standardized-cities/explanation*.

———. 2014b. "Land Prices for 46 Metro Areas." *www.lincolninst.edu/subcenters/land-values/metro-area-land-prices.asp*.

———. 2014c. "State Summaries." Significant Features of the Property Tax. *www.lincolninst.edu/subcenters/significant-features-property-tax/Report_State_Summaries.aspx*.

Lincoln Institute of Land Policy and Minnesota Center for Fiscal Excellence. 2013. "50-State Property Tax Comparison Study." Cambridge, MA (May).

McCarty, T., T. Sexton, S. Sheffrin, and S. Shelby. 2002. "Allocating Property Tax Revenues in California: Living with Proposition 13." *94th Annual Conference Proceedings of the National Tax Association.*

O'Sullivan, A., T. Sexton, and S. Sheffrin. 1995. *Property Taxes and Tax Revolts: The Legacy of Proposition 13.* New York: Cambridge University Press.

Sheffrin, S. 1998. "The Future of the Property Tax: A Political Economy Perspective." In *The Future of State Taxation*, ed. David Brunori, 129–145. Washington, DC: Urban Institute Press.

———. 2013. *Tax Fairness and Folk Justice.* New York: Cambridge University Press.

Sheffrin, S., and T. Sexton. 1998. "Proposition 13 in Recession and Recovery." San Francisco: Public Policy Institute of California.

Vigdor, J. L. 2004. "Other People's Taxes: Nonresident Voters and Statewide Limitation of Local Government." *Journal of Law and Economics* 47(2): 453–476.