

**Joint Center for Housing Studies
Harvard University**

Houses, Apartments, and Property Tax Incidence

Jack Goodman

February 2005

W05-2

*A revision of a paper presented at the annual meeting of the
American Real Estate and Urban Economics Association (January 2005).*

© by Jack Goodman. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Any opinions expressed are those of the author and not those of the Joint Center for Housing Studies of Harvard University or of any of the persons or organizations providing support to the Joint Center for Housing Studies.

© 2005 President and Fellows of Harvard College. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

The author wishes to acknowledge Raphael Bostic, David Brickman, Mark Obrinsky, and Francois Ortalo-Magnè for comments on a previous draft.

Abstract

The property tax on housing is a major component of local government revenues and of consumers' housing costs. This study uses newly available data from the 2001 Residential Finance Survey to investigate the incidence of the residential property tax. Of particular interest is the estimation and interpretation of differences in tax rates by location, property value, structure type, and tenure form.

The study finds that multifamily rental housing bears an effective tax rate at least 25 percent higher than the rate on single-family owner-occupied housing for the nation overall. The level of taxation, and the apartment/house differential, varies considerably from place to place. Much, but not all, of the differential is associated with the lower property values per unit of apartments compared to houses. The gap in tax rates appears to have arisen during the 1990s, as tax rates of apartments and houses were nearly identical in 1991. The paper concludes that the residential property tax, as implemented, promotes low density development, disproportionately burdens lower valued properties, and may impose higher taxes on apartment residents than on homeowners of identical incomes.

Introduction

The property tax on residential and commercial real estate has been a prominent topic of research in both public finance and urban economics. Typically an annual levy set as a percentage of the property's market value, the property tax is a principal source of revenue for state and local governments, a significant operating cost for business, and one of the biggest components of housing costs for many consumers. The implications of the property tax for state and local fiscal positions and for spatial development patterns have been studied extensively and intensively. A recent volume that surveys the literature and offers new contributions is Oates (2001).

The incidence of the property tax on residential real estate has been another focus of research. The question "Who Pays the Property Tax?" is not only the title of a major work of the 1970s but also the topic of considerable research both before and after. Thinking has evolved over time (Fisher, 1993). For a long time, the standard view among economists was that property taxes were regressive. The property tax was thought to operate as an excise tax on housing, with the tax proportional to consumption. Because poor people spend a greater proportion of their current income on housing than do those with high incomes, the property tax, by this view, claimed a greater share of the income of the poor than of the wealthy.

But in the 1970s research showed the story to be more complicated. First, by alternative income measures the case for regressivity weakens. Specifically, because the income elasticity of demand for housing out of long-run income exceeds the elasticity based on current income, and is close to unity, the property tax by this alternative measure is closer to proportional to income—neither regressive nor progressive.

More fundamental re-thinking of the property tax during this period questioned whether it should be viewed as a tax on consumption rather than as a capital tax. Housing is an asset. Like most assets, ownership is disproportionate among higher income households, especially when rental housing is included in the calculation. Viewed as a capital tax, the property tax is clearly progressive.

Research has also investigated how differences in property tax rates from place to place can affect property values, housing capital allocations, residential mobility, and tax incidence. Differences in tax rates across jurisdictions also have been found to matter. Capital is expected to move from high to low tax rate areas, and similarly consumers would be expected to be

attracted to low tax jurisdictions, all else equal. These movements of capital and consumers among taxing jurisdictions will themselves alter local property values, with the equilibrium results determined by demand and supply elasticities in each jurisdiction. The upshot is that the long-run equilibrium differences in property values, and incidence of the tax, may differ considerably from the initial impact of the tax.

Even with all this work, large gaps remain in what is known about the residential property tax. First, straightforward comprehensive descriptions of the incidence of the tax have been in short supply. Most studies have been based on specific municipalities or regions. There is a need for accurate national estimates and for comparable estimates across jurisdictions.

Second, differences in property taxes across property types have received little attention. Almost all the work has been on owner-occupied single-family properties. Investigation of differences with rental properties, and multifamily rentals in particular, has been limited to anecdotes and case studies of individual jurisdictions. Even those studies that compare across jurisdictions typically do so for only selected cities.¹ There is a need to document in a nationally representative way the differences in these tax rates.

Third, a careful investigation of the reasons for, and implications of, the differential taxation by property type is needed. Why do they arise and what are the implications for spatial development patterns and housing market operations?

This paper provides new information on these three topics.

Data

Data for this study come from the 2001 Residential Finance Survey (RFS), conducted by the U.S. Census Bureau. The RFS surveys a national sample of residential properties² and collects information on their physical and financial characteristics. Importantly, the RFS includes both single-family and multifamily properties and identifies all housing tenures (owner-occupied, renter occupied, and vacant), all property sizes, and whether the property is a mobile home or part of a condominium development.

¹ A study by the Minnesota Taxpayers Association, 1998, is the only one I have found that compares tax rates for houses and apartments across jurisdictions, but it does so only for one city per state. More common are studies that examine jurisdictional differences in the taxation of only single-family houses, such as Government of the District of Columbia, 2004.

² A “property” can have multiple structures, as in the case of low rise garden apartment communities.

The RFS has unique strengths as a data source for property tax research. Because the RFS is a component of the decennial Census program, responses are mandatory for those owners and lenders included in the sample. The survey collects information both from the property owner or the owner's agent, and also in the case of mortgaged properties from the lender. The sample is large, totaling 39,644 properties, and with application of the survey weights the sample is representative of the U.S. housing stock. The size and basic physical features of the stock as estimated by the RFS are similar to those from other sources, increasing the confidence in the representativeness of the sample.

Despite these strengths, the RFS, like all surveys, has some drawbacks. The locations of sampled properties are not disclosed, to protect confidentiality. The only geographic identifiers are region, state (for 12 states with large sample sizes), and city/suburb/nonmetro location. In addition, responses are subject to error. Not all respondents answered all the survey questions, and some responses were illegible or implausible and were edited in the final version of the survey that was released for public use. Some statistics related to data quality for key variables in this study appear in the appendix table. In addition, as described later in the analysis section, outliers were excluded from the sample before some tabulations were run.

Even those observations remaining in the estimation sample are subject to error. The two most important variables in the analysis are property value and annual property taxes. Responses to these survey questions are provided by owner occupants and, in the case of rental or vacant housing, by the property's owner or manager. Regarding property values, previous research has documented that homeowners on average overestimate the market value of their house, in one study by an average of 6 percent (Goodman and Ittner, 1992). I am not aware of any studies on the accuracy of reported rental property values or tax payments. For much of the analysis, however, what matters is not so much the error in these reports but whether the pattern of errors differs by property type. If, for example, rental property values are overstated more, on average, than are owner-occupied properties, then the tax rate (tax/value) of rental properties will be understated relative to owner-occupied properties. Responses in the RFS suggest, however, that value reporting is similar across property types. Among those single-family owner-occupied houses reported purchased in the three years prior to the RFS on which no major capital improvements had been undertaken since purchase, the respondent's estimate of property value at the time of the RFS had a median value that was 7.5 percent above the stated purchase price.

The equivalent statistic for rental properties with five or more units was a very similar 5.1 percent.

Property Types and Property Taxes: Some Basic Statistics

Property taxes vary considerably by property type (Table 1). The effective tax rate (annual tax paid divided by property value) for all residential properties nationwide has a median value of 0.92 percent, but ranges from a low of 0.90 percent for owner-occupied single-family houses to a high of 1.20 percent for two-to-four unit rental properties.³ Stated differently, small rental properties pay a tax rate one-third higher than do single-family owner-occupied properties.

Table 1: The U.S. Housing Stock, 2001

Property Type	Properties		Housing Units		Property Tax Rate			unweighted number of observations
	number (millions)	share of U.S. total	number (millions)	share of U.S. total	median	mean	std error of est. mean	
owner-occupied single family house	56.9	68.2	56.9	54.8	0.0090	0.0104	0.00009	13459
owner-occupied condos	3.9	4.7	3.9	3.7	0.0092	0.0103	0.00029	1544
owner-occupied mobile homes	5.7	6.9	5.7	5.5	na	na	na	1352
two-to-four unit rental properties (including those with the owner occupying a unit)	3.1	3.7	7.3	7.1	0.0120	0.0145	0.00047	1368
rental or vacant mobile homes	1.7	2.1	1.7	1.7	na	na	na	286
rental or vacant condos	1.6	1.9	1.6	1.6	0.0096	0.0170	0.00176	666
rental properties with 5+ units	0.5	0.7	16.7	16.1	0.0114	0.0142	0.00009	19368
single family rentals/vacants	9.9	11.8	9.9	9.5	0.0096	0.0131	0.00024	1593
Totals	83.5	100.0	103.9	100.0	0.0092	0.0111	0.00006	39644

Source: author's calculations from the 2001 Residential Finance Survey

Notes: The property tax rate is defined as the annual real estate tax divided by the estimated market value of the property. The median and mean tax rates are based on property weights, not unit weights. Property tax calculations exclude properties with reported negative property values, property taxes in excess of property values, or missing data for property taxes. These exclusions eliminate 2 to 4 percent of the observations, depending on property type.

The tax rate varies considerably from property to property within the sample. These differences represent differences in local policy, differences in quality of policy implementation, and differences in reporting accuracy in the RFS.⁴ Because of the large sample size of the RFS,

³ The effective tax rate is the product of the tax as a percentage of assessed value and assessed value as a percentage of market value. Jurisdictions vary in their practice of setting assessed values relative to market values.

⁴ The RFS tax rate for single-family owner-occupied houses is directly comparable to an estimate that can be generated from the 2001 American Housing Survey (AHS). The AHS estimate of the median is .0095, nearly identical to the .0090 in Table 1. The AHS-estimated mean of .0127 is somewhat higher than the RFS estimate, but differences in survey treatment of outlier responses may be the reason.

the standard errors of the estimated mean tax rates are small and the differences in means across property types are statistically significant.

Table 1 shows that the housing stock is dominated by two of the eight categories shown in the table: single-family owner-occupied houses and rental properties with five or more units. Together they account for 71 percent of all housing units and 69 percent of all properties. Although the weighted distributions shown in Table 1 are predominantly single-family, especially in the distribution of properties, the RFS oversampled large rental properties to ensure sufficient cases for analysis, and the RFS sample actually contains more multifamily rental properties (n=19,368) than single-family owner-occupied properties (n=13,459).

These rental properties with five or more units, which we will subsequently call “apartment properties,” have a median tax rate that is 27 percent higher than that of owner-occupied houses; the mean tax rate of apartments is 37 percent higher.⁵ Because of the predominance of apartments and single-family houses in the housing stock, and because of the market and policy importance of the relative tax treatment of these two property categories, the rest of the analysis will be restricted to them.

Tax Rate Differences by Location, Property Type, and Value

Laws and practices regarding property taxation are partly determined by state government.⁶ It is not surprising, therefore, to find that the property tax rate applied to houses and apartments varies considerably from state to state (Table 2). For houses, the rate is highest in New Jersey and New York, and lowest in California, where the “Proposition 13” ceilings on property taxes play a major role. In general, states with relatively high tax rates for houses also have high rates for apartments.

The higher tax rate on apartments than on houses observed in the national totals holds for each of the 12 states identified in the RFS data file. Among these 12, the tax disparity is greatest

⁵ To the extent that property tax rates are capitalized into property values, property values will be reduced and the observed tax rate will be higher than if the tax were not capitalized into values. If either the rate of taxation or extent of capitalization differs between houses and apartments, the comparison of tax rates could be influenced. However, tax rates are low enough that this potential distortion is minimal. For example, even if the tax rates in Table 1 represent full capitalization of the tax into property values, “decapitalizing” the tax by boosting the property value by the capitalized (at 8 percent) amount of the annual tax reduces the homeowner median tax rate to 0.81 percent from the 0.90 percent in Table 1 and the apartment median rate to 1.00 percent from the 1.14 percent of Table 1. The relative gap in house and apartment tax rates is approximately maintained by this adjustment.

⁶ For a listing and analysis of state laws, see National Conference of State Legislatures, 2004.

in California, Florida, and Michigan. The differential is smallest in Illinois, New York, and Washington state.

Why the higher tax rate for apartments? First, many jurisdictions as an explicit policy tax apartments more heavily than single-family houses. Apartments are often classified as commercial real estate, because they are income generating, rather than as housing, and commercial property is taxed at a higher rate than residential real estate in many locales.⁷ Sometimes the higher taxation of apartment is not explicit policy, but jurisdictions that cap taxes and tax increases for single-family houses, without setting corresponding caps for apartments, essentially have a policy of lower taxation for owner-occupied houses. One recent example is in Illinois, where legislation in 2004 capped increases in assessed values for single-family homeowners at 7 percent a year, with no cap set for apartments (*Apartment Finance Today*, 2004).

Table 2: Tax Rates by State

State	Single-Family Owner-Occupied Houses				Rental Properties with Five or More Units				Ratio of Rental Tax Rate to Single-Family Tax Rate	
	median	mean	s.e. of mean	n	median	mean	s.e. of mean	n	medians	means
			(pct. pts.)				(pct. pts.)			
California	0.59%	0.65%	0.02%	1294	0.84%	1.01%	0.02%	2917	1.42	1.57
Florida	1.00%	1.00%	0.03%	786	1.59%	1.53%	0.03%	1040	1.59	1.53
Illinois	1.60%	1.53%	0.04%	562	1.74%	1.74%	0.07%	471	1.09	1.14
Massachusetts	1.04%	1.04%	0.04%	299	1.12%	1.46%	0.06%	314	1.08	1.40
Michigan	1.13%	1.18%	0.04%	582	1.67%	1.77%	0.05%	405	1.47	1.50
New Jersey	2.09%	2.13%	0.11%	442	2.78%	2.25%	0.05%	497	1.33	1.05
New York	2.00%	1.75%	0.04%	673	2.23%	1.91%	0.06%	2120	1.12	1.09
Ohio	1.08%	1.09%	0.05%	646	1.25%	1.25%	0.03%	572	1.15	1.15
Pennsylvania	1.47%	1.51%	0.04%	754	1.87%	1.84%	0.04%	630	1.27	1.21
Texas	1.38%	1.29%	0.04%	817	1.80%	1.71%	0.02%	2561	1.30	1.33
Virginia	0.65%	0.69%	0.03%	355	0.76%	0.84%	0.03%	341	1.18	1.22
Washington	1.00%	0.91%	0.03%	310	1.00%	1.19%	0.04%	582	1.00	1.31
All Others	0.73%	0.85%	0.01%	5655	1.11%	1.35%	0.01%	6492	1.51	1.58
U.S. Total	0.90%	1.04%	0.01%	13175	1.14%	1.42%	0.01%	18942	1.27	1.36

Source: author's tabulations from the 2001 Residential Finance Survey

Even if the stated tax rates on houses and apartments are the same, the law may be implemented in such a way as to tax apartments more heavily. For example, some jurisdictions value owner-occupied houses by sales prices and value apartments by rental revenue or net operating income (Almy, 2000). The resulting valuations may not be comparable, and houses and apartments may be assessed differently relative to true market value. Similarly, differences in frequency of assessments of houses and apartments in markets with changing property prices

⁷ A compendium of state laws regarding property classifications is available in Appendix A of U.S. Bureau of the Census (1994).

will open different gaps between assessed values and current market values for houses and apartments.

Another possible reason for higher taxation of apartments is their lower value per unit. If something in the property tax regulations or their enforcement caused properties with lower values per unit to be taxed more heavily than higher valued property, the result would be a higher tax for apartments because of their lower average value per unit. On the other hand, if property tax exemptions and other concessions are targeted on lower valued properties and lower income occupants, the tax rate would be expected to be positively related to value per unit.

Finally, another possibility is that apartments are disproportionately located in higher tax-rate jurisdictions. If this is the case, then the higher tax rate observed for apartments in the aggregated data would be numerically correct but result from differences in tax rates across jurisdictions rather than necessarily from differences by property type within jurisdictions.

Preliminary tabulations identified property value per unit as a strong correlate of tax rate, at least for multifamily properties. This is demonstrated in Table 3, which gives the median and mean tax rates for properties by property type and value. Looking down the righthand column shows that there is a clear negative relationship between property tax rate and value per unit among multifamily properties. Among single-family properties, the middle column shows no monotonic association, as the lowest tax rates are found among the lowest and highest valued houses. Comparing across rows, in the lowest value category the median and mean tax rates on apartments is much higher than that on houses of similar value, and the tax rates of these low-valued apartments is by far the highest rate of any of the 10 categories shown in this table. In the higher value categories, the apartment/ house tax differential declines and then switches, with apartments paying a lower rate than houses in the top three value categories. However, because most (70 percent) apartment properties are in the low value group, the overall median tax rate on apartments is considerably higher than that on houses, as shown in the bottom row, where the median match those shown earlier in Table 1. In other words, most apartments pay a higher property tax rate than do comparably valued houses.

Note also in Table 3 that the oversampling of multifamily properties in the RFS leads to large differences between the unweighted and weighted distribution of properties. Fully 41 percent of the sample properties in Table 3 are multifamily properties in the lowest value category (13,170 of 32,117), whereas the weighted estimates indicate that this category accounts

for less than 1 percent nationally of all houses and apartment properties combined. As a share of all housing units, this category of course accounts for a larger share of the housing stock.

Table 3: Property Tax Rates by Property Type and Value Per Unit

Value Per Unit	Property Type	
	single-family owner-occupied	multifamily rental with 5+ units
<u><\$55,001</u>		
median/mean tax rate (%)	0.81 / 1.18	1.43 / 1.61
percent of all properties (weighted)	15.23	0.64
unweighted sample size	1,941	13,170
<u>\$55,001-\$90,000</u>		
median/mean tax rate (%)	0.88 / 1.04	0.92 / 1.08
percent of all properties (weighted)	20.13	0.15
unweighted sample size	2,661	3,642
<u>90,001 - \$133,333</u>		
median/mean tax rate (%)	0.95 / 1.06	0.80 / 0.97
percent of all properties (weighted)	19.29	0.06
unweighted sample size	2,629	1,194
<u>\$133,334 - \$200,000</u>		
median/mean tax rate (%)	0.96 / 1.06	0.65 / 0.86
percent of all properties (weighted)	22.25	0.02
unweighted sample size	3,095	525
<u>\$200,000+</u>		
median/mean tax rate (%)	0.85 / 0.94	0.44 / 0.69
percent of all properties (weighted)	22.19	0.04
unweighted sample size	3,133	411
<u>All Properties</u>		
median tax rate (%)	0.90 / 1.05	1.14 / 1.42
percent of all properties (weighted)	99.00	1.00
unweighted sample size	13,175	18,942

note: unweighted sample counts are for observations used in these tabulations and due to missing data will be slightly below those in Table 1.

The tax rates of Table 3 document that both value and property type are correlated with tax rate, but that the effects are interactive rather than additive. Might value and structure type be merely proxying for other variables that influence the tax rate? Specifically, differences across properties in locations and time since purchase may account for some of the observed correlations between the tax rate and value/structure type. Multivariate regressions were

employed to test these possibilities. The basic specification takes the effective tax rate to be an additive function of location and time since property purchase, as well as of a value/property type interaction variable. For location, the variables are state (12 are identified in the RFS) and whether the property is in a central city or a suburban ring. Relatively few apartment properties are located outside of metropolitan areas. Therefore, to increase the geographic similarity of the single-family and multifamily observations, the regressions are run only on properties within metropolitan areas. A last control for location is property age. Because properties in local areas tend to be of similar age, this variable should provide an additional control. The next independent variable is time since property purchase. In many jurisdictions, properties are re-assessed based on transactions prices, and it may be that properties purchased recently are assessed closer to market value than are other properties.

Because of likely nonlinearities, all independent variables are set as categoricals. Property age and time since purchase each have two categories. The value/structure type interaction variable has six categories, reduced for simplicity from the 10 in Table 3 by collapsing the top two value groups for each property type into one, now called “high,” and the two below those, now called “medium.” Definitions and distributions of these variables are given in the appendix.

The first specification pools all the observations in the national sample and takes state to be a shift variable affecting the overall tax rate but not the relative rate of apartments and houses. The results, in Table 4, show that the basic pattern of tax rates by value and structure type in Table 3 is not much changed by controls for location and time since purchase. For example, Table 4’s regression coefficient of -0.34 for “house / low” can be interpreted as saying that the mean tax rate on low valued houses is 0.34 percentage points below that of low value apartments of the same locations and time since purchase. This 0.34 can be compared to the 0.43 percentage point difference in medians (1.61 minus 1.18) for the corresponding entries in Table 3. In summary, even after controlling for location and time since purchase, all but the highest valued apartments pay a higher tax rate than do comparably valued houses.

The results in Table 4 are from an ordinary least squares estimation based on unweighted observations. Alternative estimations, first on weighted observations, and then using median (minimum absolute error) and robust estimation methods, resulted in numerically similar

coefficients and the same qualitative conclusion regarding the effects of structure type and value on the property tax rate. These results are available upon request.

State laws and practices have a significant influence on property tax rates, judging from the estimates of Tables 2 and 4. (In Table 4, the fact that all the state coefficients are positive indicates that, controlling for the other variables in the regression, all states have higher property taxes than the omitted state category: California. This is consistent with the bivariate results of Table 2.) Furthermore, Table 2 showed that the house/apartment differential in tax rates varies by state; this interaction effect is motivation for estimating the model of Table 4 separately for the states.

Table 4: Regression Results for Pooled National Sample

Dependent Variable: Property Tax Rate

mean value in estimation sample: 1.30

Independent Variable

	<u>coefficient</u>	<u>t-ratio</u>
structure type / value interaction		
apt / medium	-0.451	-22.4
apt / high	-0.743	-17.8
house / low	-0.340	-9.6
house / medium	-0.439	-20.8
house / high	-0.482	-24.3
city/suburb location		
suburb	0.041	2.8
property age		
built recently	-0.004	-0.3
time since purchase		
purchased recently	-0.121	-7.6
state		
Florida	0.314	9.5
Illinois	0.862	20.7
Massachusetts	0.405	8.0
Michigan	0.397	9.2
New Jersey	1.202	28.8
New York	1.130	39.3
Ohio	0.384	9.9
Pennsylvania	0.628	16.8
Texas	0.739	26.3
Virginia	0.073	1.5
Washington	0.185	4.2
All Others	0.143	6.5
constant	1.191	54.5
adj R-sq	0.15	
sample size (n):	26489	

omitted categories:

structure type / value: apartment / low

city/suburb: city; property age: built before 1980;

time since purchase: bought prior to 1998; state: California

Table 5 summarizes the state tabulations and regression results for three large, contrasting states: California, New York, and Texas. The left-hand columns give the median and mean tax rates for different property type and value combinations. Consistent with the national totals, in each of these three states the tax rate on apartments declines substantially as

value per unit increases, but among houses the effect of value on tax rate is more variable. The middle columns in Table 5 give the differences in mean tax rates relative to those of low valued apartments, first unadjusted and then adjusted via multivariate regressions for the location within the state and the time since purchase.

Table 5: Property Tax Rates by State, Structure Type, and Value

	Property Tax Rate (%)		Difference in Mean from Low Value Apartments		Percent of the State's Housing Stock in This Category	
	median	mean	unadjusted	adjusted	percent of:	
					properties	units
California						
apartments/low value	1.01	1.30	0.00	0.00	0.6%	9.2%
apartments/middle value	0.75	0.78	-0.52	-0.45	0.6%	9.3%
apartments/high value	0.59	0.64	-0.65	-0.58	0.1%	1.9%
houses/ low value	0.91	1.24	-0.06	0.02	2.6%	1.9%
houses/ middle value	0.65	0.71	-0.59	-0.51	9.3%	6.9%
houses/high value	0.57	0.60	-0.69	-0.59	43.2%	32.0%
New York						
apartments/low value	2.27	2.00	0.00	0.00	0.7%	16.5%
apartments/middle value	2.00	1.82	-0.19	-0.67	0.3%	6.4%
apartments/high value	0.65	1.12	-0.89	-0.96	0.1%	2.5%
houses/ low value	2.18	1.71	-0.30	-0.78	6.6%	4.3%
houses/ middle value	2.00	1.82	-0.18	-0.66	20.5%	13.4%
houses/high value	1.80	1.65	-0.36	-0.83	32.3%	21.2%
Texas						
apartments/low value	1.88	1.80	0.00	0.00	0.3%	16.5%
apartments/middle value	1.49	1.51	-0.29	-0.14	0.0%	2.9%
apartments/high value	0.43	1.07	-0.73	-0.91	0.0%	0.1%
houses/ low value	1.08	1.17	-0.63	-0.77	13.9%	10.7%
houses/ middle value	1.32	1.24	-0.56	-0.64	26.6%	20.4%
houses/high value	1.79	1.59	-0.21	-0.34	16.1%	12.3%

notes: estimates are for multifamily rental properties with 5+ units ("apartments") and for owner-occupied single-family houses located within metropolitan areas. "Low value" is less than \$55,001 per unit, "middle value" is \$55,001 to \$133,333, and "high value" is above \$133,333 per unit. "Adjusted" differences in means are after controlling for differences in intra-state location and time since property purchase.

Most apartments in each of these states are in the low value category of less than \$55,001 per unit. The adjusted differences in Table 5 show that in both New York and Texas, apartments are taxed at a much higher rate than comparably valued and similarly located owner-occupied houses. In New York, for example, the difference in tax rates between low value apartments and low value houses is -0.78 percentage points. Note that this adjusted difference is larger than the unadjusted difference of 0.30 percentage points, indicating that houses are found disproportionately in higher taxing jurisdictions within the state.

Of these three states, only in California are the tax rates paid by low value apartments and houses similar.

Results for the nine other states identified in the RFS are presented in an appendix.

Those results show that in each of these states, most apartments are found in the low value category. These apartments pay a higher tax rate than do comparably valued houses in five of the states. In three of the states houses pay a higher rate, and in Ohio the difference is small and its sign depends on whether it is adjusted or unadjusted. Finally, the large number of low valued apartments in unidentified states also pay a much higher tax rate than do comparably valued houses in those states as a group.

Interpretations

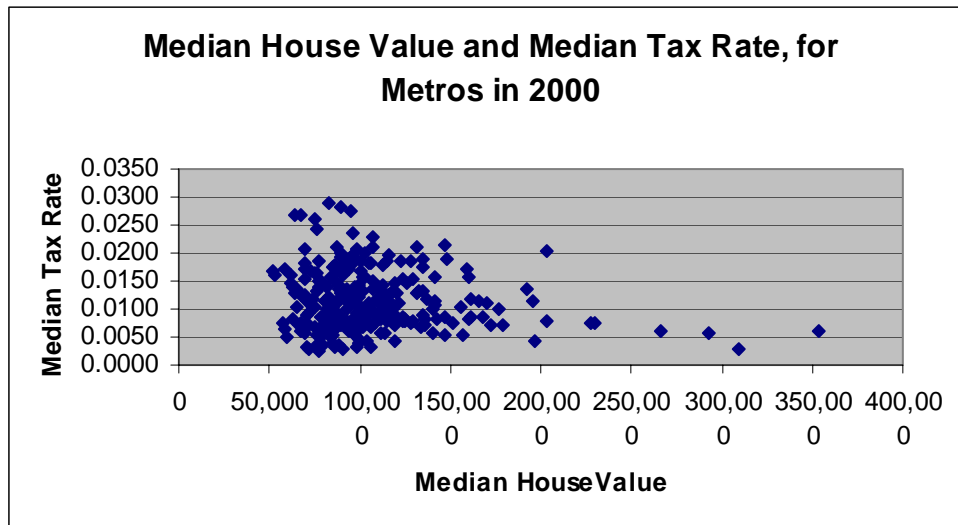
The results indicate that location, value, and structure type all influence the effective property tax rate on housing. Because the estimation is on cross-sectional data, the estimates generally reflect long run differences across jurisdictions and property categories and are the product of adjustments of consumers and housing capital to differences in tax rates. While reflecting long-run differences in rates, the estimates are not necessarily long-run equilibrium results, because markets are continuously adjusting the short-term shocks.

One of the surprises in the results is the strong effect of value per unit on the property tax rate, especially among apartment properties. This is a finding on which there is no previous evidence that I have found. Studies seem to be silent on this point, and property tax regulations generally specify the same rate of taxation regardless of value for all real estate within a property category.

One possible explanation for the negative correlation of tax rate with value per unit is that tax rates are higher within jurisdictions with low property values. If this is the case, the negative correlation is arithmetically correct but results from the aggregation across jurisdictions rather than from a practice within jurisdictions of taxing lower valued properties at a higher rate. Data from the 2000 Census suggest that higher valued jurisdictions may in fact have slightly lower tax rates, but the differential is too small to explain the value effects estimated in Tables 4 and 5. The Census provides estimates of median incomes, median values of owner-occupied houses, and median real estate taxes paid by those owner-occupants for every jurisdiction in the country. As illustrated in Figure 1 below, in which each dot represents one of the nation's 280 metro areas (CMSA or MSA), the relationship between median value and median tax rate (estimated by

median tax over median value) is only slightly negative. The simple correlation (“r”) for the data in Figure 1 is -0.14. Metro areas with median house values in the bottom third of the distribution in Figure 1 had a mean tax rate of .0112, while those in the top third had a mean rate only slightly lower at .0109.

Figure 1



Another possible explanation for the negative correlation of tax rate and value per unit is measurement error. Even if there is no bias in the owner/agent’s estimate of property value, random mean-zero error in reporting of property value will induce a negative correlation. Think of a linear regression of property tax on property value. A standard finding of econometrics is that error in the measurement of value, the independent variable, will bias its regression coefficient toward zero (Pindyck and Rubinfeld, 1991, p.160). In other words, the error results in an underestimate of the response of property tax to a change in property value. In our application, that is equivalent to a negative correlation of estimated tax rate with estimated property value. If property taxes are also reported with error, the effects on the correlation of tax rate with value are even more difficult to disentangle.

Property Tax Incidence by Income

For homeowners, the incidence of the property tax is clear: The owner-occupant pays the tax. Because the RFS collects household income data from owner-occupants, the property tax payments reported by those occupants can be compared to their income. That comparison

reveals that lower income homeowners allocate a higher proportion of their reported current incomes to property tax payments than do homeowners with higher incomes. This finding is not surprising and, as researchers have noted previously, probably does not accurately reflect the relationship of property tax payments to long-run or permanent income.

The question of more interest for this study is whether homeowners and apartment renters of the same income pay the same property tax. It is a difficult question to answer. One reason is that it is more complicated to compare property tax expense to incomes for renters than for owners. For rental housing, there is a sharp distinction between the legal incidence of the property tax and the economic incidence of the tax (Youngman, 2002). The rental property owner pays the tax bill but attempts to recoup the cost through the rent payments of the property's residents. In the short run, market rents are set by the current balance of housing demand with the available stock. Thus property taxes or other expenses have no direct effect on rents in the short run. But in the long run the stock will adjust up or down depending on the relationship of rents to costs of providing rental housing. In equilibrium, rents will equal the "user costs" to the owner of providing that rental housing. Property taxes, as one operating expense, are a part of that user cost and must be recouped through rents.

Another difficulty in comparing owners' and renters' income allocations to property taxes is that the RFS does not collect information on the incomes of occupants of rental properties. However, the rents reported in the RFS can be converted into incomes using a calibration provided by the 2001 American Housing Survey (AHS), a national survey that collects information on both rents and household incomes. I first regressed household income on contract rent for all cash renters in the AHS sample, and then used the estimated parameters from that regression to assign predicted average incomes to each RFS apartment property based on the average rent per unit of that property. Next, for comparability with the income figures for rental properties, I regressed household income on house value for single-family owner-occupants in the AHS sample, and assigned predicted incomes to the homeowner properties in the RFS based on their reported property values and the AHS calibration of the relationship of income to house value.

The predicted incomes from these regressions are longer run incomes than the current annual incomes used in the estimation. Current income has two components: one is the household's long run expected income, and the other is a transitory deviation from that long run

interpretation and the pass-through of the property tax to renters is only certain in long-run equilibrium.

Tenure, Value, and Property Tax Relief

Property tax abatement is sometimes touted as a tool for reducing the tax burden on lower income households. As such these abatements might be expected to be applied more often to apartments than to houses, because the incomes of apartment residents are on average lower.

In contrast to this expectation, owner-occupied properties are much more likely to receive property tax relief than are apartments. The RFS results indicate that 5.9 percent of single-family owner occupied get property tax relief, but only 2.0 percent of apartment properties do. Furthermore, of those homeowners receiving relief, house values and incomes are only slightly below average.⁹ When property tax relief is granted to homeowners, only about 10 percent of the time is it based on their income, according to the RFS, whereas when apartment properties receive relief, about half the instances are based on resident incomes.

Changes Since 1991

The gap between tax rates on apartments and houses has widened over time. The previous RFS was fielded by the Census Bureau in 1991. Following essentially the same design as the 2001 RFS and with nearly identical question wording, the 1991 RFS produces results indicating that at that time apartments paid the property tax at a rate only slightly higher than that of owner-occupied houses (Table 6). By the median, the difference in rates was 1 percent (.0104/.0103) and by the mean, 5 percent (.0151/.0144). Although small, the difference in mean tax rates in 1991 was statistically significant. By 2001, the gap had widened to 27 percent according to the median tax rates and to 37 percent by the mean, as described earlier.

⁹ The median household income of those owners receiving property tax relief is \$40,000, compared to \$48,000 for all owners, according to the 2001 RFS. House values for those receiving tax relief have a median of \$108,000, compared to \$123,000 for all owners.

Table 6: Property Tax Rate

Property Type	1991			2001 (from Table 1)		
	median	mean	std error of est. mean	median	mean	std error of est. mean
owner-occupied single family house	0.0103	0.0144	0.0001	0.0090	0.0104	0.00009
rental property with 5+ units	0.0104	0.0151	0.0001	0.0114	0.0142	0.00009

source: author's tabulations of the 1991 and 2001 Residential Finance Surveys

Notes: The property tax rate is defined as the annual real estate tax divided by the estimated market value of the property. The median and mean tax rates are based on property weights, not unit weights. Property tax calculations exclude properties with reported negative property values, property taxes in excess of property values, or missing data for property taxes. These exclusions eliminate 2 to 14 percent of the observations, depending on property type. Sample sizes for 1991 are 17,254 for houses and 16,567 for apartment properties.

Anecdotal evidence and industry surveys suggest that the widening gap in tax rates has resulted from actions by homeowner voters and their political allies to restrain the taxation of single family housing, while placing no such restrictions on the taxation of multifamily rental property or commercial real estate.¹⁰ It is hard, however, to document whether the tempo of these legislated constraints has picked up since the early 1990s. It is interesting to note that, according to the estimates of Table 5, the property tax rate on owner occupied houses actually declined between 1991 and 2001, while the change for apartments varies with the measure chosen. Of course, the increase in property values over the decade means that, even with the tax rate down, the median property tax bill for homeowners increased 18 percent between 1991 and 2001, according to the Residential Finance Surveys, and the median bill for apartment properties increased 34 percent (results not shown).

Implications

The property tax differential between houses and apartments has implications for spatial development, horizontal equity, and housing affordability. First, the higher tax on apartments promotes low density development. It shifts capital and construction from apartments to single-family housing, with its lower units-per-acre and generally higher land value share of total

¹⁰ For example, Ray A. Smith, "Rising Property Taxes Across U.S. Lead to a Slew of Ballot Initiatives," *Wall Street Journal*, October 25, 2004, page A4. Also, "2004 State Tax Outlook: Issues Affecting Owners and Developers of Multifamily Housing," National Multi Housing Council White Paper NMHC 04-1, January 9, 2004.

property value. The reasoning is the same as that for why the property tax, with land and improvements taxed at the same rate, promotes lower density development than what would occur through a land tax. This basic finding of the property tax literature has been subject to refinements over time, but the core conclusion has been maintained (Brueckner, 2001). Just as the property tax promotes horizontal rather than vertical development (Harriss, 1972), so too does the higher tax rate imposed on apartments.

Second are the implications for horizontal equity. The results from the regression of property tax on predicted income, while tentative, at least suggest a substantially higher property tax burden on apartment renters than on homeowners of comparable incomes. The issue of horizontal equity is distinct from the complicated issue of property tax progressivity or regressivity (Youngman, 2002) and deserving of more in-depth analysis.

Last are the implications for housing affordability. The property tax rate is highest on the lowest valued properties, according to the RFS. Furthermore, property taxes are a greater share of the total operating costs of lower rent housing. For the typical U.S. apartment property, property taxes account for 24 percent of annual operating costs, according to the RFS. But for apartments in the lowest third of the rent distribution, the property tax share averages 27 percent of total operating expense, while in the top third of the rent distribution only 21 percent. Because the property tax is largely a fixed cost of operations, managers of lower rent apartment properties have less opportunity to reduce costs through improved management.

Several elements of this research need more attention. The apparent negative correlation between value and tax rate remains a bit of a mystery. The solution to that mystery will require closer study of the quality of respondents' answers to the RFS questions on taxes and property values, as well as more work on the implications of aggregation across jurisdictions with different tax rates. More generally, anything that can tighten the locational controls used in the analysis would be significant enhancements, as would be more complete methods of comparing the property tax burdens of owners and renters of comparable incomes.

But the findings of this study, if maintained after further analysis, suggest that the residential property tax, as implemented, promotes low density development, disproportionately burdens lower valued properties, and may impose higher taxes on apartment residents than on homeowners of identical incomes.

References

- Aaron, Henry J. *Who Pays the Property Tax?* Washington, D.C.: Brookings Institution, 1975.
- Almy, Richard R. "Property Tax Policies and Administrative Practices in Canada and the United States: Executive Summary," *Assessment Journal*, July/August 2000, p. 41-57
- Brasington, David M. "Edge versus Center: Finding Common Ground in the Capitalization Debate," *Journal of Urban Economics* 52 (2002):524-541.
- Brueckner, Jan K. "Property Taxation and Urban Sprawl," Chapter 6 of Oates (2001).
- Fisher, Ronald C. *State and Local Public Finance*, Chicago, IL: Irwin, 1993.
- Government of the District of Columbia, *Tax Rates and Tax Burdens in the District of Columbia, A Nationwide Comparison 2003, 2004*.
- Goodman, Jack, and John Ittner, "The Accuracy of Home Owners' Estimates of House Value," *Journal of Housing Economics* 2 (1992):339-357.
- A Guide to Property Taxes: The Role of Property Taxes in State and Local Finances, National Conference of State Legislatures, October 2004.
- Harris, C. Lowell. "Property Taxation: what's Good and What's Bad" *Challenge*, 1972.
- "Illinois Paints Tax Target on Apartment Owners," *Apartment Finance Today*, September/October 2004, p. 12.
- Minnesota Taxpayers Association, *1998 State Property Tax Comparison Study*, 1998.
- Oates, Wallace E., ed., *Property Taxation and Local Government Finance*, Lincoln Institute of Land Policy, 2001.
- Pindyck, Robert S. and Daniel L. Rubinfeld, *Econometric Models and Economic Forecasts* 3rd ed. (McGraw Hill, 1991).
- U.S. Bureau of the Census, 1992 Census of Governments, *Volume 2 (Taxable Property Values), Number 1 (Assessed Valuations for Local General Property Taxation)*, 1994.
- Youngman, Joan, "Enlarging the Property Tax Debate – Regressivity and Fairness," *Tax Policy Readings*, October 7, 2002, TaxAnalysts website, <http://www.taxanalysts.com/www/taxpolicyreadings.nsf/0/85878D8737AC637485256E140079975B?OpenDocument> , accessed October 29, 2004.

Appendix Materials

Data Quality Statistics for Key Variables

variable	owner-occupied properties (unweighted n = 16,929)			rental or vacant properties (unweighted n = 22,715)		
	percent with missing data	percent of responses edited	percent of responses allocated	percent with missing data	percent of responses edited	percent of responses allocated
property value	8%	12%	0	1%	22%	4%
annual real estate taxes	2%	18%	0	3%	24%	0
household income	0	54%	8%	n/a	n/a	n/a
rental revenue	n/a	n/a	n/a	0	n/a	n/a
property type	0	0	0	0	5%	0

note: percentages shown are based on unweighted observations.

Variable Definitions and Distributions

variable	definition and distribution
property tax rate	annual real property tax paid in 2000 divided by owner's estimate of value at time of RFS survey; mean value = 1.30, std. dev. = 1.18
structure type	1=5+ unit rental property; 0=single-family owner occupied house; mean value = 0.63
value per unit	low = <\$55,001 (omitted category; 47% of observations); medium = >\$55,000 & <\$133,334 (31% of observations); high = >\$133,334 (21% of observations)
type/value	interaction of the two preceding variables: 1 = low-value rental (43% of observations); 2 = medium value rental (17%); 3 = high value rental (3%); 4 = low value owner (4%); 5 = medium value owner (15%); 6 = high value owner (18%)
city/suburb location	1 = suburbs (51% of observations); 0 = central city (49%)
property age	1 = built recently (since 1980; 38% of observations); 0 = built pre-1980
time since purchase	1= purchased recently (since 1998; 26% of observations); 0= purchased pre-1998
state	state shares of estimation sample range from a low of 2% for Massachusetts and Virginia to a high of 14% for California and 34% for "all others" category
note: distributions shown are for the 26,490 observations (unweighted) used in the estimation of the model in Table 3	

Appendix Table: Property Tax Rates by State, Structure Type, and Value

	Property Tax Rate (%)		Difference in Mean from Low Value Apartments		Percent of the State's Housing Stock in This Category	
	median	mean	unadjusted	adjusted	percent of:	
					properties	units
Florida						
apartments/low value	1.75	1.64	0.00	0.00	0.2%	9.5%
apartments/middle value	1.25	1.11	-0.53	-0.39	0.1%	2.9%
apartments/high value	0.51	0.92	-0.72	-0.71	0.0%	0.3%
houses/ low value	0.90	1.10	-0.54	-0.38	5.7%	4.8%
houses/ middle value	0.96	0.97	-0.67	-0.57	26.1%	21.7%
houses/high value	1.08	1.01	-0.63	-0.54	20.0%	16.6%
Illinois						
apartments/low value	2.06	1.98	0.00	0.00	0.5%	6.6%
apartments/middle value	1.60	1.58	-0.40	-0.40	0.3%	3.7%
apartments/high value	0.03	0.60	-1.38	-0.93	0.1%	0.8%
houses/ low value	0.75	1.12	-0.86	-0.85	6.2%	5.2%
houses/ middle value	1.86	1.68	-0.29	-0.39	19.2%	16.0%
houses/high value	1.62	1.57	-0.41	-0.45	31.9%	26.5%
Massachusetts						
apartments/low value	1.27	1.61	0.00	0.00	0.4%	6.2%
apartments/middle value	0.93	1.03	-0.57	-0.87	0.2%	4.5%
apartments/high value	0.43	0.84	-0.77	-1.04	0.0%	1.3%
houses/ low value	0.05	1.05	-0.56	-0.82	1.1%	0.8%
houses/ middle value	1.43	1.46	-0.14	-0.43	7.9%	6.0%
houses/high value	1.03	1.01	-0.60	-0.87	45.3%	34.4%
Michigan						
apartments/low value	1.54	1.62	0.00	0.00	0.2%	7.5%
apartments/middle value	1.19	1.31	-0.31	-0.57	0.0%	2.1%
apartments/high value	0.26	0.40	-1.22	-1.12	0.0%	0.3%
houses/ low value	1.68	1.82	0.20	0.33	7.7%	6.6%
houses/ middle value	1.20	1.16	-0.46	-0.39	23.5%	20.0%
houses/high value	1.13	1.10	-0.52	-0.45	26.1%	22.3%
New Jersey						
apartments/low value	2.93	2.42	0.00	0.00	0.4%	10.6%
apartments/middle value	1.80	1.75	-0.68	-0.83	0.1%	2.8%
apartments/high value	2.73	2.25	-0.17	-0.93	0.0%	0.7%
houses/ low value	2.99	3.91	1.49	1.24	4.8%	3.9%
houses/ middle value	2.67	2.47	0.05	0.28	14.7%	11.8%
houses/high value	2.00	1.90	-0.52	-0.39	49.3%	39.7%

Appendix Table (continued): Property Tax Rates by State, Structure Type, and Value

	Property Tax Rate (%)		Difference in Mean from Low Value Apartments		Percent of the State's Housing Stock in This Category	
	median	mean	unadjusted	adjusted	percent of:	
					properties	units
Ohio						
apartments/low value	1.43	1.38	0.00	0.00	0.4%	15.0%
apartments/middle value	0.80	0.82	-0.55	-0.54	0.1%	1.2%
apartments/high value	0.60	0.80	-0.57	-0.99	0.0%	0.3%
houses/ low value	1.13	1.58	0.21	-0.04	7.0%	5.4%
houses/ middle value	1.09	1.03	-0.35	-0.57	31.9%	24.5%
houses/high value	1.14	1.09	-0.28	-0.46	20.1%	15.5%
Pennsylvania						
apartments/low value	2.04	1.91	0.00	0.00	0.4%	8.5%
apartments/middle value	1.00	1.17	-0.74	-0.74	0.1%	1.7%
apartments/high value	1.90	1.58	-0.33	-1.01	0.0%	0.2%
houses/ low value	1.60	1.65	-0.26	-0.18	13.2%	11.1%
houses/ middle value	1.52	1.48	-0.43	-0.33	28.9%	24.3%
houses/high value	1.41	1.42	-0.49	-0.41	19.0%	15.9%
Virginia						
apartments/low value	0.89	0.89	0.00	0.00	0.2%	8.5%
apartments/middle value	0.79	0.81	-0.08	-0.44	0.0%	3.7%
apartments/high value	0.87	0.69	-0.20	-0.58	0.0%	0.6%
houses/ low value	0.46	0.67	-0.22	-0.59	3.0%	2.5%
houses/ middle value	0.74	0.72	-0.17	-0.51	21.6%	17.8%
houses/high value	0.80	0.76	-0.13	-0.51	27.3%	22.5%
Washington						
apartments/low value	1.30	1.54	0.00	0.00	0.3%	7.8%
apartments/middle value	0.83	0.78	-0.76	-0.54	0.2%	6.3%
apartments/high value	0.50	0.50	-1.04	-0.79	0.0%	0.7%
houses/ low value	2.98	1.90	0.36	0.47	2.4%	1.9%
houses/ middle value	1.16	0.97	-0.57	-0.37	11.7%	9.2%
houses/high value	1.00	0.91	-0.64	-0.43	37.7%	29.9%
State Not Identified						
apartments/low value	1.22	1.44	0.00	0.00	0.3%	7.8%
apartments/middle value	0.80	0.96	-0.48	-0.36	0.1%	2.1%
apartments/high value	0.48	0.98	-0.46	-0.65	0.0%	0.2%
houses/ low value	0.51	0.93	-0.51	-0.37	4.9%	4.1%
houses/ middle value	0.78	0.89	-0.55	-0.37	19.4%	16.3%
houses/high value	0.83	0.88	-0.56	-0.36	19.6%	16.4%

notes: estimates are for multifamily rental properties with 5+ units ("apartments") and for owner-occupied single-family houses located within metropolitan areas. "Low value" is less than \$55,001 per unit, "middle value" is \$55,001 to \$133,333, and "high value" is above \$133,333 per unit. "Adjusted" differences in means are after controlling for differences in intra-state location and time since property purchase.