

# Essay One: Evaluation of the Property Tax Administration System in New York State

## 1. Introduction

The property tax remains the major revenue source of all of the local governments in New York State, and it is the only tax for which local governments exercise almost complete discretion in determining tax rates and thereby tax levies.<sup>1</sup> Reliance on property tax revenue to finance local governments has been relatively constant for the past decade in New York State; its portion in total revenue of local governments has been around 30 percent. In 1998, property tax represented about 42 percent of the total revenue of local governments, excluding New York City, and about 61 percent of the total own revenue source, which excludes federal and state aids (Office of the State Comptroller, New York State, 2000). Furthermore, in terms of the property tax burden per personal income, New York State ranked 10<sup>th</sup> among all states with a burden of \$45.98 per \$1,000 personal income compared to the national average of \$35.06 (Dornfest, 1998). In spite of its importance, the property tax system in New York State was regarded as one of the worst in the United States. The Report of the Temporary State Commission on State and Local Finance (1975) stated that:

*“New York’s real property tax system has reached the critical juncture; without substantial reform, it will be subject to increasing and perhaps fatal attack.”*

Subsequently, a number of reports have pointed out that in spite of such warnings, major reforms have not been made (Temporary State Commission on the Real Property Tax, New York State, 1979; League of Women Voters of New York State, 1979; Interagency Task Force on Real Property Valuation, 1996). Recently, in an overview essay written for

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<sup>1</sup> In New York, the only constraint is the constitutional real estate tax limit provisions.

the New York State Board of Regents, Berne and Netzer (1995) identified many issues related to the real property tax system in New York State, and answer the question of “what is wrong with the property tax system in New York State?” in one sentence; “The one-word answer is, for practical purposes, ‘everything’.”

The motivation for this paper comes from such criticism of the property tax system in New York State. Specifically, the paper will narrow its scope by examining key property tax administration factors and will establish a comprehensive model that will explain the determinants of assessment uniformity. This paper consists of two parts. The first part starts with explaining the meaning of assessment uniformity and its implications. Subsequently, it evaluates the assessment uniformity and the institutional structure of the New York State property tax system, with respect to its impact on assessment uniformity. The primary aim is to identify key property tax administration factors that affect the assessment uniformity of New York State by exploring the unique structure of the system. In addition, I will place it in a historical context, as well as compare it with the systems in other states. Specifically, as a primary vehicle for improving assessment quality, I will examine three important property tax administration factors -- assessment level, revaluation, and assessing units. The second part of the paper will propose and test a model for determining assessment uniformity. The key administration factors explored in the first part will be included as explanatory variables. The model also includes a behavioral component that explains how property owners’ monitoring pressure affects the behavior of assessors. The empirical results will be discussed in terms of how New York State can establish a more effective property tax administration system by changing and institutionalizing its key administration factors. It should be noted that this essay is

written mostly from the perspective of residential property due to the lack of critical information on the assessment quality of non-residential properties. For industrial and commercial properties, and accordingly, different considerations should be applied to the assessment of these categories of property. Although legally most assessing units in New York cannot use a classified property tax (different assessment ratios by type of property), assessors might have different perceptions toward non-residential properties and thereby assess them at higher values than residential property.<sup>2</sup> This possibility suggests that the analysis framework for the assessment quality of total property should be different from that for residential property only. Although this essay is expected to shed light on the determinants of assessment quality with focusing on residential property in New York State, more in-depth examination of non-residential property should be performed in the subsequent study.

## **2. Importance of Assessment Uniformity in Property Tax Administration**

Negative public attitude toward property taxes has not been an issue that is exclusive to New York State.<sup>3</sup> Historically, the property tax has been attacked as the most unfair tax even from its inception, because of its unique structure. Undoubtedly, part of its unpopularity is based on the visibility of the tax. Unlike the sales tax, which is paid in small amounts, the property tax is paid in one lump sum (or quarterly installments), which makes tax increases more visible.<sup>4</sup> Equally important, the property tax is

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<sup>2</sup> Nassau County and New York City are exceptions; they have classified property tax system by freezing the share of property tax levy by property class.

<sup>3</sup> The survey by Advisory Commission on Intergovernmental Relations (ACIR) (1991) shows that about 30 percent of respondents think the property tax is the least fair tax, which is the highest percentage compared with federal/state income tax, state sales tax.

<sup>4</sup> Visibility is, in some sense, a virtue of property tax in that it provides a sense of link between tax and public service to taxpayers.

traditionally considered regressive in a strictly partial-equilibrium framework. This is based on the argument that because it has flat tax rates and lower income households spend a larger fraction of their income on housing, property tax liabilities constitute a larger proportion of the incomes of those with lower incomes (Netzer, 1966).<sup>5</sup> Imperfect association between homeowner income and property tax burden, and fiscal disparities across jurisdictions are also cited as major factors that make the property tax unfair. The association between homeowner income and property tax burden, however, can be improved by providing property tax relief for certain groups of taxpayers<sup>6</sup>. However, the issue of fiscal disparity is essentially a problem for every local tax so it is hard to say that this is a problem that applies only to the property tax.

The most fundamental difference between the property tax and other types of taxes is the way it is administrated. The stages in property tax administration include registration, assessment, and collection processes. Although registration and collection are urgent issues in some developing countries such as Kenya,<sup>7</sup> they are not really serious problems in the United States. Chief among these administrative issues is the process of determining tax bases called assessment. Unlike other taxes, property tax requires assessment processes in which tax bases are determined by assessors rather than being observed from market transactions. Assessment processes inevitably involve some types of estimate, which can be inaccurate due to imperfect information and/or lack of assessors' professional proficiency. Simply speaking, the lack of assessment accuracy or

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<sup>5</sup> New view holds that since nearly all communities are taxing local property, the average tax rate essentially becomes a national tax on capital, so property tax is most likely to be progressive since higher-income households owns a disproportionately large share of the stock of capital (see, Mieszkowski, 1972).

<sup>6</sup> For example, an income tax credit (circuit breaker) can be provided for elderly households whose tax liability exceed a certain fraction of their income.

<sup>7</sup> The "coverage ratio," which measures the actual amount of property that is included in the tax record, is as low as between 30 percent and 70 percent in Kenya. The collection rate in Kenya is also as low as between 20 percent and 60 percent (Kelly, 2000).

assessment uniformity means that two households with the same market values for their houses can have different assessment values and tax burdens, violating the principle of horizontal equity. Another serious consequence of lack of assessment uniformity is that lower income households may pay a higher effective tax rate than higher income households. This possibility is based on some assumptions; low (high) income households own low (high) value houses and the price of low (high) value houses has increased at a slower (faster) rate than that of high (low) value houses, and all the houses have not been reassessed for a significantly long period of time. When these assumptions hold, the low income households bear a higher effective tax rates because their actual assessment ratio is now significantly higher than the ratio for high income households.

A strand of the major property tax reforms has focused on improving intra-jurisdiction assessment uniformity, since it is one of the most fundamental and critical components of the property tax system that determines the extent to which property tax is regarded as fair. In short, although a better property tax administration system does not guarantee horizontal and/or vertical equity of property tax burdens, without a good property tax administration, property tax equity cannot be achieved.

### **3. Value Concepts and Key Measures in Property Tax Administration**

Property tax administration involves many value concepts and technical terms (Appendix 1). Although there are some variations in applications, basically a property should be appraised at its market value by an assessor.<sup>8</sup> The appraised value of a property refers to an assessor's judgment as to the full market value on a specific appraisal date, which is solely the responsibility of the assessor. The appraisal value

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<sup>8</sup> This is true in every state in the United States. The variations in this context refer to technically different appraisal methods to estimate the market values of properties.

estimated by an assessor could be different from the market value of the property, mainly because the assessor estimates the market value based on outdated information in cases of lack of reassessment for a long period of time, and/or the assessor's appraisal performance is not good enough to make the appraisal value close to the market value. The assessment ratio means the nominal ratio of assessed value to market value set by an assessing unit. The assessed value is defined as the appraisal value multiplied by the assessment ratio and this figure is used for tax base. While the nominal assessment ratio is the same for all properties in an assessing unit (e.g., 50 percent of appraisal value), the actual assessment ratio can vary substantially within the assessing unit.<sup>9</sup> This is due to the discrepancy between the market value and the appraisal value of the property. Under ideal circumstances, if the appraisal value of all property is exactly the same as its market value, the actual assessment ratio is equal to the assessment ratio. However, in reality, there are always some variations in actual assessment ratio within an assessing unit. For example, two identical houses in an assessing unit can have two different actual assessment ratios, say, 50 percent and 60 percent, respectively. This means that the tax base for the first house is 50 percent of its market value while the ratio of assessed value to market value is 60 percent for the second house. Looking only at the two ratios, it is uncertain that what assessment ratio is applied in the assessing unit, since no information is provided for the difference between their appraisal values and the market values. However, it is clear that the second house owner has to bear more property tax than the first house owner. Such variations of actual assessment ratio among the properties within an assessing unit could be very small or quite large. When the variations are small, the

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<sup>9</sup> The (nominal) assessment ratio could be different in the classified assessment system, in which different types of property are assessed at different assessment ratios.

assessment is accepted as being relatively uniform in an assessing unit, and vice versa. Hence, the assessment uniformity within an assessing unit essentially depends on the degree of variation in actual assessment ratio which exists in an assessing unit.

The most widely used measure of assessment uniformity is the coefficient of dispersion (COD), which measures the average percentage deviation of individual assessment ratios from the median assessment ratio.<sup>10</sup> Using an example illustrated in Table 1, assume that the COD is 10 in an assessing unit, with a median assessment ratio of 0.8. On average, a property in this assessing unit would have an assessment ratio that was either 0.08 higher (0.88) or lower (0.72) than the median assessment ratio. A low COD indicates relatively uniform assessments in an assessing unit, meaning that the properties are assessed at relatively consistent percentages of their market values.

The International Association of Assessing Officers (IAAO) established a set of standards for acceptable levels of COD, which is the most widely accepted and used by assessors and oversight agencies (IAAO 1990, 1999). The range of acceptable levels of COD varies according to several factors including; is the property type, the degree of diversity of property, and the relative ages of structures, but generally between 10 and 20. For example, for residential properties in homogeneous areas, the IAAO recommends COD should be equal to or less than 10. More detailed information of the assessment uniformity criteria is provided in Table 2.

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<sup>10</sup>  $COD = \left( \frac{(\sum |A_i/S_i - M|) / N}{M} \right) * 100$ , where,  $A_i$  represents the individual assessment ratio of property  $i$ ,  $S_i$  is the market value of individual property  $i$ ,  $M$  refers to the median assessment ratio, and  $N$  means the number of parcels.

Another popular measure of variability is the coefficient of variation, which represents the standard deviation of the assessment ratios expressed as a percentage of the mean assessment ratio (COV). In spite of its familiarity, COV is logically inferior to COD in that the normal distribution assumption on the assessment-sales ratio is hardly met thereby being excessively weighted by extreme values of assessment-sales ratios (Sorensen, 1983: 19-20).

Table 1: Example of COD Calculation

Parcel No.	Assessed Value (\$)	Market Value (\$)	Actual Assessment Ratio	Absolute Deviation to Median Assessment Ratio
1	92,000	100,000	0.92	0.12
2	88,000	100,000	0.88	0.08
3	80,000	100,000	0.80	0.00
4	76,000	100,000	0.76	0.04
5	64,000	100,000	0.64	0.16
Median Actual Assessment Ratio: 0.80				
Total Deviation (Sum of Absolute Deviation to Median Assessment Ratio): 0.40				
Average deviation from the median assessment ratio = (Total Deviation / Number of Parcels)				
=(0.40/5)=0.08				
COD = Average Deviation / Median Assessment Ratio = 0.08 / 0.80 = 10 percent				

Table 2: IAAO Recommendations for Assessment Uniformity Criteria

Property Class	Category	Recommendations
Residential Properties	New, more homogeneous areas	COD < 10
	Older, heterogeneous areas	COD < 15
	Rural Residential and Seasonal	COD < 20
Income Producing Property	Larger, Urban Jurisdictions	COD < 15
	Smaller, Rural Jurisdictions	COD < 20
Vacant Land		COD < 20
Entire Assessment Roll	The level of appraisal within each group of properties should be within 5 percent of the overall appraisal ratio in the assessing units	
Source: IAAO (1999) "Standard on Ratio Studies."		

#### 4. Assessment Uniformity in New York State

The New York State Board of Real Property Services (SBRPS) regularly monitors the quality assessments through its Market Value Survey.<sup>11</sup> SBRPS samples parcels evaluated at the values as of January 1 of the survey year. For example, for the 1998 Market Value Survey, the assessment roll from which parcels are sampled must

<sup>11</sup> It is required by Section 1200 of the Real Property Tax Law.

have been finalized prior to January 1, 1998. Assessing units having completed reassessment within three years prior to the survey commencement year were not sampled for survey purposes since the 1994 Market Value Survey. This means that the SBRPS regards the quality of assessment in the assessing units that perform reassessment within three years as being acceptable. The typical sample size for residential property is about 5 percent of the total residential properties in an assessing unit, and about 4 percent for total property including commercial and industrial properties.<sup>12</sup>

The market value of residential property in each assessing unit is estimated using either one of two approaches: sales ratio study or computer-assisted mass appraisal ratio study (CAMA). The sales ratio study involves a systematic comparison of assessing values to sale prices for properties that have been sold. The sales price may be time-adjusted. This method is used only if there are sufficient sales to provide a reliable estimate of the ratio of assessed value to sale price. CAMA uses the market value generated by a computer model. The model uses multiple regressions to predict market value of residential parcels based on the physical inventory characteristics of those parcels. This approach is used in assessing units with few sales of residential property.

For estimating market values for industrial and commercial properties, the cost approach, as well as the income approach, are used more often than the sale ratio study and CAMA. The cost approach involves estimating the cost of constructing either a replica or an alternative facility, having equivalent utility at current input prices. This cost plus the land value, estimated using sales data, and less accumulated depreciation is the market value. This approach is best for unique properties that are seldom exchanged and

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<sup>12</sup> In the 1998 Market Value Survey, the average sample size for residential property is 4.7 percent and it is 3.8 percent for total property.

generate no income, especially industrial properties. The income approach generates the market value by discounting projected income provided by the property (net of expenses associated with generating that income) to determine present value of future income flows. This represents the amount a knowledgeable investor would be willing to pay for the property. This approach is best suited for estimating market value of commercial property.

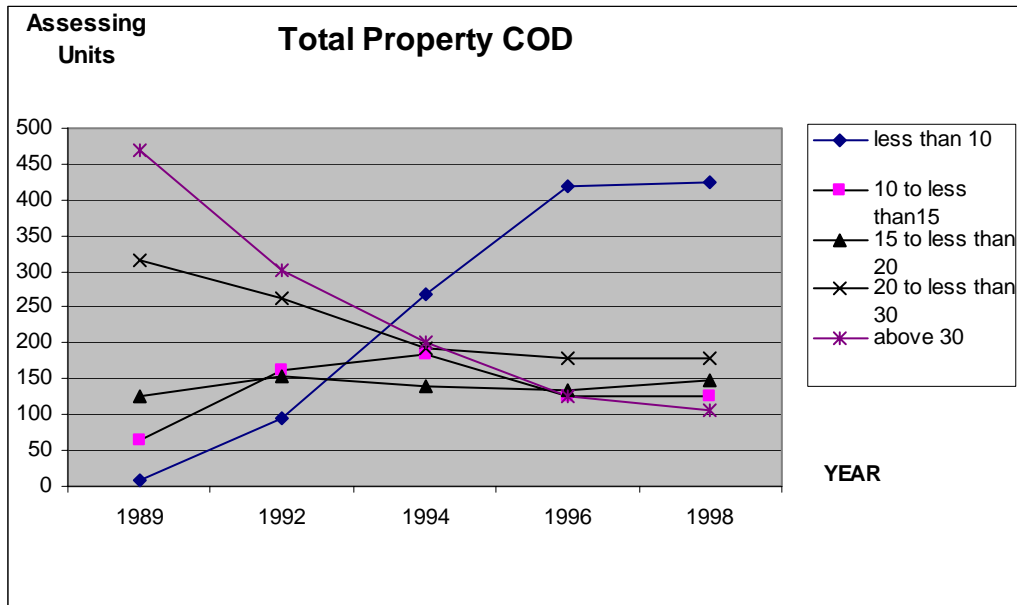
Once the market values of the sampled properties are estimated, SBRPS computes the actual assessment ratios by comparing the market values with the assessed values reported by the assessing units. Finally, COD for each assessing unit is calculated. The market value survey is mainly used for two purposes. As mentioned before, the survey is primarily used by the state to monitor the assessment quality in assessing units. Its also used for generating equalization rates. The equalization rate is the rate that generates equalized property values within a jurisdiction (e.g., state). In the market survey, the equalization rate is computed as the average assessment ratio in an assessing unit. A significant portion of state aid is distributed based on the property tax base in local jurisdictions. Because the local governments are supposed to report the total amount of property values in their jurisdiction at the assessed value, the state needs to standardize the assessed values to fairly compare the property values across local jurisdictions.<sup>13</sup>

Figures 1 and 2 show the recent trends of CODs in New York State for total properties and residential properties, respectively, based on the Market Survey Data provided by SBRPS. Starting with the 1994 market survey, SBRPS changed its policy by

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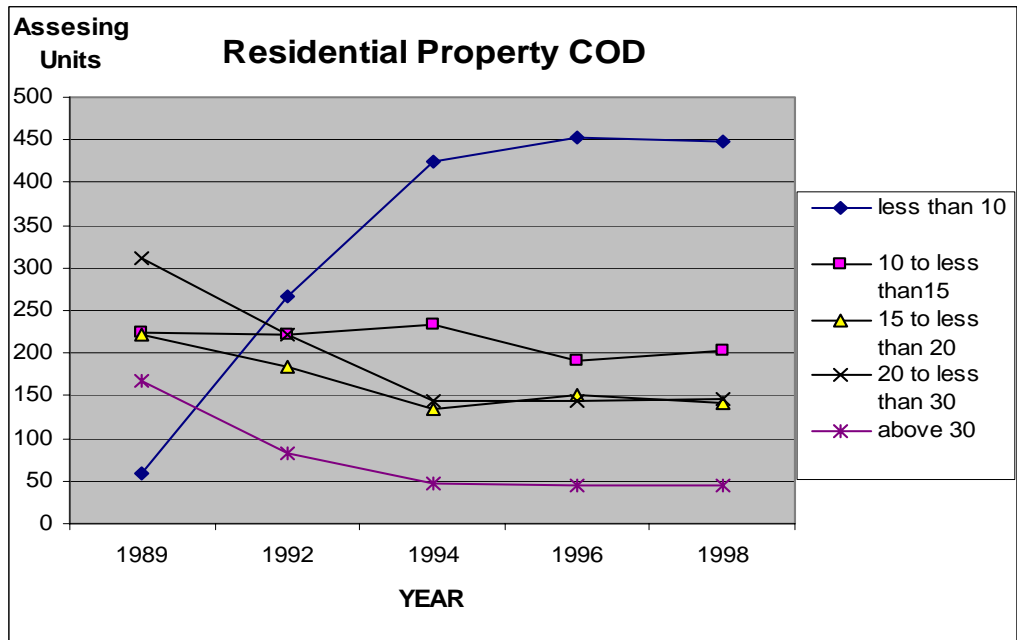
<sup>13</sup> The assessing units could be different from the taxing jurisdictions. For example, school districts are not assessing units but are major property taxing units. If a taxing unit has multiple assessing units in it, multiple equalization rates are applied according to the portion of properties assessed by each assessing unit.

Figure 1: Assessment Uniformity for Total Properties in New York State



Source: Assessment Equity in New York, 1990, 1992, 1994, 1996, 1998, 2000  
(Office of Real Property Tax Service, New York).

Figure 2: Assessment Uniformity for Residential Properties in New York State



Source: Assessment Equity in New York, 1990, 1992, 1994, 1996, 1998, 2000  
(Office of Real Property Tax Service, New York).

excluding the assessing units that have performed reassessment within three years from the survey base year. Consequently, in 1996, 381 units were excluded from the survey and 386 units were excluded in 1998. In order to show the trends, the excluded units are included in the category where CODs are less than 10, accepting the SBRPS's arguments that the non-sampled units are most likely to fall into this category.<sup>14</sup> Looking at the figures, we can identify two distinctive trends of assessment uniformity, which gives us a critical insight into the current policy of New York State with regards to property tax administration. First, the number of assessing units whose assessment uniformity levels are acceptable (CODs less than 10) has increased dramatically from 8 in 1989 to 419 in 1996, however there is no notable change since then. Second, although the number of assessing units with relatively low assessment uniformity (CODs of 30 or higher) decreased significantly from 1989 to 1994, but have also remained fairly stable since 1994.

Tables 3 and 4 show average CODs and reassessment activities by region in two market survey years, 1992 and 1998. Overall, CODs in 1998 are lower than that in 1992, but with some regional variations. In terms of residential property, upstate assessing units maintained acceptable assessment quality both in 1992 and 1998 and downstate assessing units also show improved assessment quality in 1998. However, in terms of total property, including non-residential properties, downstate assessing units show a quite different picture. They have substantially high CODs in both 1992 and 1998, while upstate assessing units have CODs that fall into the acceptable range. Looking at the reassessment lag, we can identify that the improved assessment quality in upstate regions

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<sup>14</sup> Having conducted revaluation within the past three years by no means guarantees that their CODs are less than 10. For example, 10 out of 21 towns in Essex County, all of which revaluated in 1990, had CODs higher than 10 in the 1992 market survey.

Table 3: Average CODs by region (1992 Market Value Survey)

Region	Number of	COD for	COD for	Reassessment	Reassessment
Downstate	Assessing Units <sup>c</sup>	Residential Property	All Property	Frequency <sup>a</sup>	Lag <sup>b</sup>
Small Cities	6	19.6	36.4	0.2	20.8
Suburbs	40	18.4	28.8	0.3	20.2
New York City	1	31.0	31.7	8.0	0.0
Yonkers	1	25.6	26.1	0.0	25.0
Upstate					
Large Cities	3	13.0	21.9	1.3	10.0
Rural	407	19.1	30.0	0.7	11.7
Small Cities	48	13.9	19.6	0.8	12.0
Suburbs	469	14.9	24.0	1.1	9.5
Notes:					
<sup>a</sup> Number of reassessment activities between 1982 and 1991 property tax roll year.					
<sup>b</sup> The number of years between the year the last reassessment was performed and 1991 roll year.					
<sup>c</sup> Village assessing units are excluded.					
Sources:	ORPS (1994) "Assessment Equity in New York: Results from the 1992 Market Value Survey."				
	ORPS (1995) "Reassessment Project Activity in Cities and Towns in New York State, 1982-1995."				
	Electronic data from ORPS for reassessment activity after 1995 roll year.				

Table 4: Average CODs by region (1998 Market Value Survey<sup>a</sup>)

Region	Number of	COD for	COD for	Reassessment	Reassessment
Downstate	Assessing Units <sup>d</sup>	Residential Property	Total Property	Frequency <sup>b</sup>	Lag <sup>c</sup>
Small Cities	6	17.9	32.8	0.2	23.5
Suburbs	40	14.7	21.6	0.2	18.2
New York City	1	N/A	N/A	10.0	0.0
Yonkers	1	19.6	36.0	0.0	31.0
Upstate					
Large Cities	3	15.1	15.3	1.3	2.0
Rural	407	13.4	15.7	1.1	7.2
Small Cities	48	14.6	15.8	0.9	7.3
Suburbs	469	11.6	14.1	1.2	7.4
Notes:					
<sup>a</sup> 386 assessing units are not included in the survey because they performed reassessment within the three years before 1998. Following the advice from ORPS, I assume 10 CODs for those assessing units.					
<sup>b</sup> Number of reassessment activities between 1988 and 1997 property tax roll year (10 years).					
<sup>c</sup> The number of years between the year the last reassessment was performed and 1997 roll year.					
<sup>d</sup> Village assessing units are excluded.					
Sources:	ORPS (2000) "Assessment Equity in New York: Results from the 1998 Market Value Survey."				
	ORPS (1995) "Reassessment Project Activity in Cities and Towns in New York State, 1982-1995."				
	Electronic data from ORPS for reassessment activity after 1995 roll year.				

might be due to reassessment activities. In contrast, the reassessment activities in the downstate region are significantly lagged so that the modest improvement in assessing quality in downstate regions may be affected by the other non-reassessment factors, such as heterogeneous house value variations. The relationship of reassessment and other factors with assessment uniformity will be discussed in detail in the empirical model sections.

## **5. Review of Key Property Tax Assessment Components in New York State**

In the following section, three key property tax assessment components will be examined with regard to their implications for improving assessment uniformity. These components are selected based on a number of interviews with assessment practitioners and government officials in New York State, as well as a review of the literature dealing with property tax administration.

### **5.1. Standard of Assessment Level: Potential Impacts of Full Market Value Standard**

The causal link that value concepts and assessment standards affect the assessment uniformity is not straightforward. Assessment uniformity within an assessing unit matters only if there is substantial variation of the actual assessment ratio. This section first reviews current systems and historical changes of assessment standards implemented in the states, and then examines the impact of full value standard on assessment uniformity, both theoretically and empirically.

As reviewed previously, the assessed value is defined as a certain portion of the appraised value. According to various laws across the United States, the assessed value

should be fair market value, full value, actual value, true money value, cash values,<sup>15</sup> or a specified fractional proportion of such value. These appraisal and assessment processes are some of the most important components of the property tax administration because these processes directly determine property tax base.

The nominal assessment ratio, referred to as the assessment standard, determines the assessed value of property based on appraisal value. Assessment standards and appraisal value concepts employed in the United States in 1991 and 2000 are summarized in Tables 5 and 6. Examining the assessment standard currently used in each state, we can identify some interesting variations across states and peculiar features in New York State. First, in terms of property value concept, there are a variety of ways to define the appraisal value, but most of these seemingly different terms generally mean the fair market value. In short, market value is the most probable sales price of a property in a competitive and open market (IAAO, 1990). In the case of New York State, no specific value concept is clearly stated for appraising values in the Real Property Tax Law (RPTL), but other sections in the RPTL, denote that appraisal values are measured by market, cost, and income methods, so the appraisal values are presumed as market values.<sup>16</sup> Second, with regard to the legal assessment ratio, 21 states employ the full market value standard, and another 21 states have a specific fractional assessment ratio set by state laws or regulations. The remaining 8 states have somewhat flexible standards. Some states simply limit the maximum assessment level, or specify the range of variation. New York and Rhode Island simply require that a uniform assessment level be

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<sup>15</sup> Although there are slight differences among these values in terms of definition and practical application, generally these values are regarded as market values that are determined by the reasonable selling and buying process in the market.

<sup>16</sup> State courts hold that ‘value’ means ‘market value’ (SBRPS, 1995)

Table 5: Appraisal Value Concepts

State	Appraisal Value Concept
AK	Full Value
AL	Fair Market Value
AR	True and Market or Actual Value
AZ	Full Cash Value
CA	Full Cash or Fair Market Value
CO	Actual Value
CT	Actual or Fair Market Value
DE	True Money Value
FL	Full Cash Value
GA	Fair Market Value
HI	Fair Market Value
IA	Actual Value
ID	Market Value
IL	Fair Cash Value
IN	True Tax Value(by Tax Board)
KS	Market Value
KY	Fair Market Value
LA	Market Value
MA	Full & Fair Cash Value
MD	Phased-In Value
ME	Just Value
MI	True Cash Value
MN	Market Value
MO	True Value
MS	True Value
MT	Market Value
NC	True Money Value
ND	Full & True Value
NE	Actual Value
NH	Full & True Value
NJ	True Value
NM	Full Value
NV	Taxable Value
NY	No Specific Value Concept
OH	True Value
OK	Fair Market Value
OR	True Cash Value
PA	Actual Value
RI	Full & Cash Value
SC	Market Value
SD	Market Value
TN	Actual Value
TX	Fair Market Value
UT	Fair Market Value
VA	Fair Market Value
VT	Fair Market Value
WA	Fair Money Value
WI	True Cash Value
WV	Actual Value
WY	Fair Market Value

Source: 1992 Census of Government: Volume 2 (Taxable Property Values).

Table 6: Legal Assessment Ratios

State	Ratio <sup>a</sup>	Ratio <sup>c</sup>	State	Ratio <sup>a</sup>	Ratio <sup>c</sup>
	1999	1991		1999	1991
<b>AK</b>	100%	100%	<b>MT</b>	100%	100%
<b>AL</b>	N/A <sup>b</sup>	20%	<b>NC</b>	N/A <sup>b</sup>	100.0%
<b>AR</b>	100%	20%	<b>ND</b>	4.5%	4.5% <sup>f</sup>
<b>AZ</b>	10%	10%	<b>NE</b>	100%	100%
<b>CA</b>	100%	100%	<b>NH</b>	100%	100%
<b>CO</b>	N/A <sup>b</sup>	14.34%	<b>NJ</b>	N/A <sup>b</sup>	20%-100%
<b>CT</b>	70%	70%	<b>NM</b>	33.3%	33.3%
<b>DE</b>	N/A <sup>b</sup>	100.0%	<b>NV</b>	35%	35%
<b>FL</b>	100%	100%	<b>NY</b>	UNIFORM	UNIFORM <sup>g</sup>
<b>GA</b>	40%	40%	<b>OH</b>	35%	35% <sup>i</sup>
<b>HI</b>	100%	100%	<b>OK</b>	N/A <sup>b</sup>	<sup>e</sup>
<b>IA</b>	100%	100%	<b>OR</b>	N/A <sup>b</sup>	100%
<b>ID</b>	100%	100%	<b>PA</b>	N/A <sup>b</sup>	100%
<b>IL</b>	33.3%	33.3%	<b>RI</b>	N/A <sup>b</sup>	100% <sup>h</sup>
<b>IN</b>	N/A <sup>b</sup>	33.3%	<b>SC</b>	N/A <sup>b</sup>	4.0%
<b>KS</b>	11.5%	12%	<b>SD</b>	100%	Max 100%
<b>KY</b>	N/A <sup>b</sup>	100%	<b>TN</b>	25%	25.0%
<b>LA</b>	N/A <sup>b</sup>	10%	<b>TX</b>	100%	100%
<b>MA</b>	100%	100%	<b>UT</b>	100%	71%
<b>MD</b>	40%	40%	<b>VA</b>	100%	100%
<b>ME</b>	N/A <sup>b</sup>	100%	<b>VT</b>	N/A <sup>b</sup>	100%
<b>MI</b>	N/A <sup>b</sup>	50%	<b>WA</b>	N/A <sup>b</sup>	100%
<b>MN</b>	N/A <sup>b</sup>	<sup>d</sup>	<b>WI</b>	100%	100%
<b>MO</b>	19%	19%	<b>WV</b>	60%	60%
<b>MS</b>	10%	10%	<b>WY</b>	9.5%	9.5%
Notes:					
<sup>a</sup> Residential Single Family Property.					
<sup>b</sup> No Response.					
<sup>c</sup> Residential Property.					
<sup>d</sup> Adjusted by "Net Tax Capacity" Factor.					
<sup>e</sup> Currently Set between 11%-14% (Max 35%).					
<sup>f</sup> Assessed Value is 50% of the Full & True Value / Taxable Value is 10% (9%) of Assessed Value.					
<sup>g</sup> Max 100% Full Value.					
<sup>h</sup> or Uniform with Max 100%.					
<sup>i</sup> State law sets tax value at no more than 35% of true value; commissioner set taxable value at 35%.					
Sources:					
1999:	IAAO (2000) "Property Tax Policies and Administration in Canada and the United States."				
1991:	Census of Government (1992) Volume 2. Taxable Property Values.				
	IAAO (1990, 1991), "Taxonomy of Administrative and Legal Features of States and Provinces of the United States and Canada."				

determined by local jurisdictions. Legislation enacted in New York in 1981, actually sanctioned the *de-facto* practices of assessing units by requiring the level of state enforcement be limited to uniformity within an assessment jurisdiction. The legislation was in response to substantial deviation of practical assessment ratio applied in the assessing units from the full market value standard mandated in the RPTL.

Substantial disparity between legal and actual assessment standards was common in many states in the 1960s and 70s. Table 7 shows that among 20 states that employed the full market value standard, 14 states had an actual assessment ratio of assessment value to sales prices (A/S), which was lower than 50 percent. In the case of New York State, this incompatibility was more serious with an actual assessment ratio only 25.8 percent, the fifth lowest in the country. For this reason, between 1961 and 1971 14 states abandoned the full market value standard in favor of the more politically realistic fractional standard, although two states, Washington and North Carolina, adopted the full market value standard during this period (ACIR, 1974).

Actually, the full market value standard has had a long history in New York State, dating back to 1788.<sup>17</sup> Despite the statutory mandate for assessment at full market value, and because the courts of the state had not been enforcing this standard, local jurisdictions were essentially free to determine the assessment ratio (Sockowitz, 1990)<sup>18</sup>. Such a widespread practice, however, faced a critical challenge in the court case of *Hellerstein v. Assessor of the Town of Islip* in 1975. The court rejected the common belief that the fractional assessment satisfies the full market value standard required by the RTPL, and declared that the market full value standard did not permit assessors to assess

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<sup>17</sup> Act of Mar. 7, 1788, chapter 65 N.Y. Laws 769.

<sup>18</sup> Different assessment ratios by the type of property were not allowed, except in Nassau County and New York City.

Table 7: Legal and Actual Assessment Ratios in 1971

State	Actual Assessment Ratio	Legal Assessment Ratio
AK	75.1%	100.0%
AL	19.7%	30.0%
AR	12.5%	20.0%
AZ	10.7%	18.0%
CA	20.0%	25.0%
CO	20.7%	30.0%
CT	47.8%	UNIFORM (MAX 100%)
DE	36.5%	100.0%
FL	63.2%	100.0%
GA	35.7%	40.0%
HI	54.0%	70.0%
IA	23.3%	27.0%
ID	10.6%	20.0%
IL	37.8%	50.0%
IN	23.5%	33.3%
KS	21.3%	30.0%
KY	83.8%	100.0%
LA	13.1%	UNIFORM (Not Below 25%)
MA	49.3%	100.0%
MD	47.8%	100.0%
ME	52.9%	100.0%
MI	41.5%	50.0%
MN	8.5%	30.0%
MO	23.1%	100.0%
MS	14.7%	100.0%
MT	7.7%	30.0%
NC	44.6%	Determined Locally
ND	15.1%	50.0%
NE	27.5%	35.0%
NH	65.1%	100.0%
NJ	58.3%	UNIFORM (20-100%)
NM	27.5%	100.0%
NV	27.1%	35.0%
NY	25.8%	100.0%
OH	36.9%	UNIFORM (MAX 100%)
OK	18.2%	35.0%
OR	87.1%	100.0%
PA	26.6%	100.0%
RI	50.5%	Determined Locally
SC	4.0%	100.0%
SD	36.5%	60.0%
TN	32.6%	35.0%
TX	18.1%	100.0%
UT	14.9%	30.0%
VA	34.8%	100.0%
VT	33.3%	Determined Locally
WA	36.1%	50.0%
WI	46.7%	100.0%
WV	36.2%	100.0%
WY		16.6%
Source:	Advisory Commission on Intergovernmental Relations (1974).	
	The Property Tax in a Changing Environment: Selected State Studies Table 2.	

at less than the full market value. Combined with the revaluation order, the full value standard enforcement implied substantial shifts in the property tax burden at that time, which was a politically infeasible option to the legislature and the governor. In order to avoid the court order, the legislature decided to repeal the full value standard in 1981, instead of establishing effective tools to enforce the compliance with the legal requirement. By eliminating the full value standard and legitimizing the *de facto* practices, in 1981, New York State lost a chance to remedy the unfair tax burden caused by improper property tax administration.

The long tradition of local governments' under-assessing property values is one of the main factors that contribute to the widespread fractional assessment practices (Johnson, 1966). State aid formulas for local governments of New York use the property tax as a measure of the capacity of local governments to raise taxes. The aid is distributed inversely to property wealth, there is significant incentive for local governments to under-assess their own property tax base. Although such incentives were eliminated by the states' use of the equalization rate as a distribution basis, taxpayers still fear the large increases in the property tax base because it would not be accompanied by a commensurate reduction in tax rates (ACIR, 1974). Although several states adopted mandatory rate reduction statutes, taxpayers generally perceive that the higher level of assessment means higher tax burdens and they are more sensitive to their own assessed value than the tax rate which is equally applied to all taxpayers (Gaskell, 2002). By the same token, to politicians, raising tax rates has political ramifications far less adverse than sending out individual notices of the increased assessment value to each taxpayer (Shannon, 1967). The tradition of local assessment autonomy, a historical heritage in the

colonial states (Benson et al, 1965), is a distinctive feature that hinders the implementation of statewide full value assessment. In contrast to the southern and western states, in the eastern states, including New York State, most decisions regarding property tax administration are determined by local jurisdictions. This so called “Home-Rule” tradition in New York State, which implies that the state government cannot enforce certain policies without providing adequate financial support, is based on the logic that in the absence of effective political support, it is futile to give state tax authorities coercive power over local assessment officials (Shannon, 1967).

One might question why the fractional assessment is detrimental to the assessment uniformity, which is most relevant to our empirical analysis. The common argument for the fractional assessment is that as long as an assessor makes an equivalent effort to assess all properties at the same percentage, the results of the fractional assessment are not really different from those of the full market value assessment. While theoretically this argument seems to be valid, empirical evidence indicates that fractional assessment reduces assessment uniformity. In the study of the uniform assessment in Virginia, Bowman and Mikesell (1978) found that actual assessment ratio, not the legal standard, has a significant effect on the uniformity of property tax assessment measured by COD. The theory supporting this hypothesis is that the closer assessments are to market value, the greater the information they convey to taxpayers. The higher level of information to taxpayers provides necessary information for deciding whether to appeal, and this is a valuable contribution to promoting assessment equity (Bowman and Mikesell, 1978). This argument is in line with the conventional wisdom that the fractional assessment is thought to serve as a “graveyard” of assessors’ mistakes (Shannon, 1969).

Another influential study by Bowman and Butcher (1986) explored the effects of full value standard. Between 1971 and 1980, Virginia returned to the full market value assessment standard, but it was not yet fully implemented by 1980. Taking advantage of this institutional change, Bowman and Butcher found that the actual assessment ratio had a highly significant effect on the assessment uniformity. Besides these two studies, a body of research has identified the significant effects of higher assessment ratio on the assessment uniformity (e.g., Geraci, 1977; Geraci and Plourde, 1976).<sup>19</sup>

Recent trends in the change of legal assessment standards indicate increased adoption of full value standard. The first observation is that between 1971 and 1991, seven states (Idaho, California, Iowa, Montana, Nebraska, Washington, and Hawaii) decided to initially adopt or return to the full value standard, whereas five states (West Virginia, Maryland, New Mexico, Missouri, and South Carolina) abandoned the full value standard. Such a trend is substantially different from the one between 1961 and 1971, where fourteen states abandoned full market value standard while only two states adopted this standard. Another feature of interest is that two states, Vermont and New Jersey, recently repealed the locally determined assessment standard and adopted a full market value standard. Combined with the first observation, this implies that an increasing number of states have come to realize the importance of the full value standard.

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<sup>19</sup> Unfortunately, none of previous studies on this issue corrects for the potential endogeneity of assessment ratio except for some studies that take advantage of natural experimental opportunities (e.g., Bowman and Butcher, 1986).

## 5.2. Revaluation: Is A Specific Revaluation Cycle Critical?

One of the most significant property administration factors affecting assessment uniformity is the assessment cycle, because valuation is the heart of the operation of the property tax (Mikesell, 1980). While the assessment standard indirectly affects the assessment quality through its behavioral influence on assessors and property owners, revaluation directly affects assessment quality. Logically, when the market value of properties are changing rapidly, especially when there is heterogeneity in growth rates among properties, the lower the revaluation frequency, the lower the assessment uniformity as defined by the COD. New York State is one of the few states which have no legal provision for specific assessment cycle; the revaluation decision is determined solely by local assessing units (Table 8). In the IAAO's 2000 survey, nine states reported that they had no specific assessment cycle. Comparing the 2000 IAAO survey and the information from the 1992 Census of Government, suggests that there have been distinctive trends toward shorter assessment cycles. Specifically it reveals that, 1) seven states (Kentucky, New Hampshire, South Carolina, Utah, Vermont, West Virginia, and Wisconsin) have adopted the annual assessment cycle; 2) three states (Arkansas, Colorado, Mississippi) abandoned the annual assessment cycle and instead adopted a longer assessment cycle; 3) three states (Maine, Connecticut, Montana) shortened or lengthened the assessment cycles; 4) one state (Oregon) abandoned a specific assessment cycle and allowed the local jurisdictions to decide their own assessment cycles.

As in the Hellerstein assessment standard court case, legal provisions for the assessment cycle do not guarantee that the actual revaluation occurs within the cycle (Mikesell, 1980). Without effective enforcement tools, it is hard to implement the legal

Table 8: Legal Assessment Cycle

State	1999		1991	State	1999		1991
	Legal <sup>a</sup>	Most Common	Legal		Legal <sup>a</sup>	Most Common	Legal
AK	LOCAL	2-3	LOCAL	MT	6	4-6	3
AL	LOCAL <sup>b</sup>	4	LOCAL <sup>b</sup>	NC	<sup>c</sup>	4-8	8
AR	3	5	ANNUAL	ND	LOCAL	5-10	NONE
AZ	ANNUAL	ANNUAL	ANNUAL	NE	(*4)	5-10	NONE
CA	LOCAL	ANNUAL	NONE	NH	ANNUAL	<sup>d</sup>	NONE
CO	2	2	ANNUAL	NJ	LOCAL	Varies	NONE
CT	4	4	10	NM	2	2	2
DE	LOCAL	Varies	NONE	NV	5	5	5
FL	ANNUAL	ANNUAL	ANNUAL	NY	LOCAL	Varies	NONE
GA	4	3	NONE	OH	<sup>c</sup>	6	<sup>c</sup>
HI	ANNUAL	ANNUAL	NONE	OK	4	4	4
IA	2	2	4	OR	LOCAL	6	6
ID	5	5	5	PA	LOCAL	<sup>d</sup>	NONE
IL	4	4	4	RI	<sup>c</sup>	10	<sup>h</sup>
IN	4	4	4	SC	ANNUAL <sup>c</sup>	5	NONE <sup>i</sup>
KS	ANNUAL	ANNUAL	ANNUAL	SD	ANNUAL	<sup>d</sup>	NONE
KY	ANNUAL	<sup>d</sup>	4	TN	ANNUAL <sup>i</sup>	6	4 TO 6
LA	4	<sup>d</sup>	4	TX	3	3	3
MA	3	3	3	UT	ANNUAL <sup>g</sup>	5	ANNUAL
MD	3	<sup>d</sup>	3	VA	ANNUAL to 6	4	2 TO 4
ME	<sup>c</sup>	<sup>d</sup>	4	VT	<sup>c</sup>	<sup>d</sup>	ANNUAL
MI	<sup>d</sup>	<sup>d</sup>	NONE	WA	ANNUAL to 6	ANNUAL	2 TO 4
MN	<sup>a</sup>	<sup>a</sup>	4	WI	ANNUAL	ANNUAL	5
MO	2	2	2	WV	ANNUAL	ANNUAL	3
MS	4	4	ANNUAL	WY	ANNUAL	ANNUAL	ANNUAL
Notes:							
<sup>a</sup> LOCAL: Locally Determined.							
<sup>b</sup> No assessment cycle but if COD>30 or assessment level <85% or>105%, the local assessing unist should reassess by the order of DOR (Department of Revenue).							
<sup>c</sup> Other cycle longer than 6 years.							
<sup>d</sup> No Response.							
<sup>e</sup> Or every 8 years depending on the type properties.							
<sup>f</sup> Or every 6 years depending on the type properties.							
<sup>g</sup> Or every 5 years depending on the type properties.							
<sup>h</sup> At least 10 years.							
<sup>i</sup> But South Carolina Tax Commission has a power to oredr reappraisal based on sales ratio study.							
Sources							
2000:	IAAO (2000) "Property Tax Policies and Administration in Canada and the United States."						
1991:	Census of Government (1992) Volume 2. Taxable Property Values.						
	IAAO (1990, 1991), "Taxonomy of Administrative and Legal Features of States and Provinces of the United States and Canada."						

requirement, primarily due to political controversy and substantial costs caused by revaluation. In some cases, revaluation means simply “updating” assessment rolls by applying trending techniques with a flat percentage increase of all properties. Strictly speaking, the true revaluation means the reappraisal of all properties in order to reflect the true market value changes of properties. In this regard, the results of the IAAO’s survey are somewhat ambiguous since the survey items don’t distinguish full reappraisal from simple updating of assessment rolls, especially in the case of the annual revaluation where full reappraisal is unlikely. It is also true that the assessment cycle does not necessarily mean that all the properties within a jurisdiction should be revalued at the same time, this is called mass cyclical assessment. Some states specify segmental revaluation, where only a certain portion of the properties are revalued each year and within the specified cycle all the properties should be completely revalued.

Tables 9 and 10 provide information on the status of revaluation in New York State.<sup>20</sup> One of the most striking features is that 133 assessing units, 13.4 percent of the total assessing units have not revalued within the past 30 years. Some assessing units in Putnam County and Westchester County have not performed revaluation since the Second World War. Only half of the assessing units have revalued within the past 5 years, and the average revaluation age is 9.16 years. Table 10 shows that 282 assessing units (28.4 percent) have not carried out a revaluation between 1990 and 1999. On average, assessing units have revalued only 1.14 times within this period. Although these

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<sup>20</sup> The data in this paper only include cities, towns, or sometimes two counties (Nassau and Tompkins); village data are not available, but since the importance of village data is not substantial in terms of number of parcels, the analyses will not be substantially affected by the village level data.

Table 9: Revaluation Lag (Number of Years Last Reassessment Occurred before 1999)

<b>Reassessment Lag</b>	<b>Number of Assessing Units</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
0	87	8.8	8.8
1	135	13.6	22.4
2	90	9.1	31.4
3	73	7.4	38.8
4	56	5.6	44.4
5	62	6.2	50.7
6	60	6.0	56.7
7	32	3.2	59.9
8	61	6.1	66.1
9	55	5.5	71.6
10	19	1.9	73.5
11	23	2.3	75.8
12	11	1.1	76.9
13	13	1.3	78.3
14	4	0.4	78.7
15	3	0.3	79.0
16	8	0.8	79.8
17	7	0.7	80.5
18	6	0.6	81.1
19	11	1.1	82.2
20	1	0.1	82.3
21	5	0.5	82.8
22	1	0.1	82.9
23	10	1.0	83.9
24	3	0.3	84.2
25	17	1.7	85.9
26	4	0.4	86.3
27	1	0.1	86.4
28	1	0.1	86.5
29	1	0.1	86.6
30	133	13.4	100.0
<b>Total</b>	<b>993</b>	<b>100</b>	
Source: Reassessment Activities in New York, 1990, 2000 (Office of Real Property Tax Service, New York)			

Table 10: Revaluation Frequency (Number of Reassessments Computed between 1990 and 1999)

<b>Frequency</b>	<b>Number of Assessing Units</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
0	282	28.4	28.4
1	413	41.6	70.0
2	203	20.4	90.4
3	69	7.0	97.4
4	23	2.3	99.7
5	1	0.1	99.8
7	1	0.1	99.9
10	1	0.1	100.0
<b>Total</b>	<b>993</b>	<b>100</b>	

Source: Reassessment Activities in New York, 1990, 2000  
(Office of Real Property Tax Service, New York)

figures cannot exactly be compared with those of other states,<sup>21</sup> IAAO's 2000 survey results imply that New York State is among the lowest states with regards to actual revaluation activities.

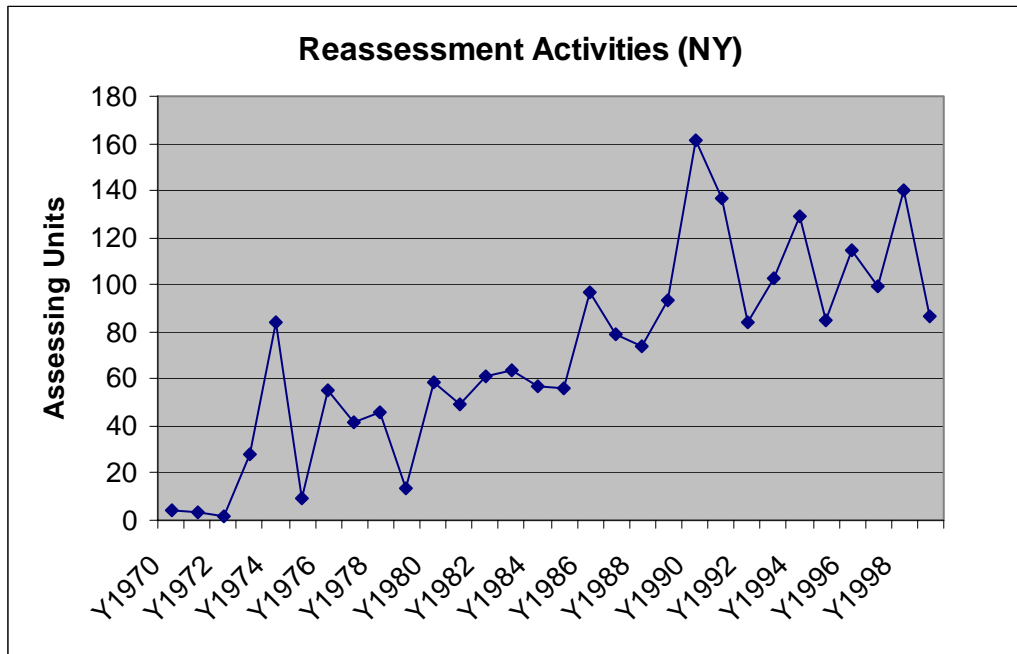
Looking at Figure 3, there is an increasing trend in the number of units that performed revaluation. Given that there had been neither the state's active involvement nor legal enforcement of regular revaluation, such increasing revaluation activities are more likely due to the other factors such as requests from the business sector and court orders<sup>22</sup> or political pressure resulting from increased recognition by residents of the inequity of the property tax administration. The policy orientation of New York State is not to enforce certain assessment practices by establishing legal provisions, but rather to induce better performance by subsidizing revaluation activities. The state uses two types of aid to encourage revaluation: "Annual Reassessment Aid" paid for by the assessing units upon completion of a full revaluation and "Supplemental Attainment Aid" paid for by those assessing units that attempt to update the initial revaluation in subsequent years (SBRPS, 2000). A simple descriptive analysis suggests that these aid programs effectively increase revaluation frequency. In Table 11, revaluation frequency supported by ORPS, (ORPS-assisted) outnumbers non-ORPS-assisted revaluation. Given that the revaluation decision is determined through complicated political processes within assessing units, current state aid programs may encourage assessing units which have good property tax administration to continue to revalue, although they may not be effective tools for solving the political conflicts prevailing in assessing units that have not

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<sup>21</sup> Some states didn't state the average actual revaluation cycle, and furthermore, those figures are not formally calculated or reported information such as census of government data, although survey respondents were at the responsible position in property tax administration in each state.

<sup>22</sup>The Nassau County Supreme Court case is a notable example.

Figure 3: Reassessment Activities in New York State



Source: Reassessment Activities in New York, 1990, 2000		
(Office of Real Property Tax Service, New York)		

Table 11: Revaluation Activities Assisted by New York Office of Real Property Tax Service (ORPS)

Year	ORPS-Assisted	Non-ORPS Assisted	Total
1985	41	15	56
1986	78	21	99
1987	49	28	77
1988	58	15	73
1989	68	24	92
1990	132	19	151
1991	110	27	137
1992	73	13	86
1993	88	15	103
1994	114	14	128
1995	74	11	85
1996	105	11	116
1997	91	11	102
1998	140	4	144
1999	87	2	89
2000	193	3	196
Source: Reassessment Activities in New York, 1990, 2000. (Office of Real Property Tax Service, New York).			

reassessed in a long time. To put it another way, without legal enforcement provisions for revaluation, state aid programs are not likely to effectively improve the uniformity of assessment in the assessing units that have not done revaluation for decades; breaking the *status quo* without legal provision is extremely hard.<sup>23</sup>

The capitalization theory provides an effective tool for understanding the complicated stakes facing property owners as well as a strong argument for periodic revaluation. Differentiated property tax burdens, caused by assessment errors or revaluation lag are capitalized into house values in line with these differences for as long as these differences are expected to persist. Therefore, the house owners have windfall capital gains from under-assessed house values or losses from the over-assessed house values when they sell the houses.

Subsequent owners of the houses do not have any windfall gains or losses since the tax differences are already reflected into the house values.<sup>24</sup> If such tax differences are eliminated suddenly, the subsequent owners of under-assessed houses will experience capital losses since they paid higher prices for the houses, expecting that the under-assessment, and thereby lower tax burden, would continue. The reverse can be applied to the subsequent house owners of over-assessed houses. Although an unexpected correction for assessment values causes inequities among new house owners, if the revaluation is an ongoing process, not a one-time correction, it will induce long-term horizontal equity (Yinger et al, 1988). That is, the expectation that the distorted assessment values will be corrected or updated in the near future and periodically, will reduce the

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<sup>23</sup> Numerous court cases in Nassau County have attempted to break this long-standing status quo.

<sup>24</sup> There is no consensus made on the capitalization rates in the literature (Yinger et al., 1988).

degree to which the current tax differences are capitalized into the house values, thereby minimizing windfall capital gains or losses to house owners. The longer the period between revaluations, the larger the potential capital losses by revaluation, and the more difficult it is politically to get a consensus supporting revaluation.

Infrequent revaluation could cause more serious social issues than the unfair economic gains or losses. In the court case of *Coleman et al. v. Seldin (1999)*, the supreme court of New York State, Nassau County declared:

“Beginning in 1964, litigation involving the county’s methods of assessment has shown that it may have a disparate impact, and has highlighted the inevitability of county-wide assessment. What in the past may have been viewed as ‘unintentional’ discrimination may now fairly be considered intentional, and the county’s continued failure to act in reliance on ‘unintentional’ discriminatory results can no longer act as a shield for the county’s practices.”

Nassau County is under revaluation now by the court order.

Such discrimination is primarily due to the differentiated market value changes among certain groups of properties, which are generally divided by residential socio-economic status, and the property tax exploitation by infrequent revaluation has been proved empirically (e.g., Heavy, 1983).

### 5.3. Assessing Units: What Level of Government Should Have Assessment Functions?

Many property tax experts<sup>25</sup> in New York State consistently point out that the most fundamental issue of the property tax administration is the structure of highly

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<sup>25</sup> Based on the interview with Gaskell (2002), Moorman (2002), and Martins (2002), a former executive director of ORPS, a government officer in the Syracuse Regional Office of ORPS, the assessor of town of Manlius, respectively.

decentralized assessing units. In term of number of assessing units, New York State ranks fourth; only Wisconsin, North Dakota, and Michigan outnumber New York State (Table 12). New York State is also one of only a few states that have village or equivalent level assessing units. In contrast, 27 states only have state or county level assessing units and 5 states (Delaware, Minnesota, Tennessee, Missouri, and Iowa) have predominantly county level assessing units plus a small number of other levels of assessing unit (mainly municipalities). Comparing changes in the number of primary assessing units between 1991 and 1999 provides a mixed picture (Table 13). In 5 states (Indiana, Illinois, Mississippi, Virginia, and New Mexico), the number of primary assessing units were expanded to include lower levels of local jurisdictions (e.g., from county level to county/municipality levels), and thereby the number of them notably increased. However, these changes should not be directly interpreted as evidence that the assessment function became more decentralized in those states, because the surveys are not exactly comparable. While the 1999 survey questionnaire asked for the exact number of assessing units in each jurisdictional category (state, county, municipality, town, and others), the 1991 survey just asked for the total number of primary assessing units. In the 1991 survey, some respondents may have included only the number of primary assessing units, excluding other levels of assessing units. Given that delegating the assessing responsibilities to lower level jurisdictions would place substantial financial burdens on local jurisdictions, and the demand for uniform assessment is being increased by taxpayers and by courts, the trend of decentralized assessing systems is hardly perceivable. In contrast, 2 states made big shifts to more centralized assessing systems; Minnesota no longer has town/township assessing units and Montana has only the state

Table 12: Number of Assessing Units by State

State	State	County	Municipality	Township	Others	Total	Rank
AK	1	12	13			26	43
AL	1	67				68	30
AR	1	75				76	28
AZ	1	15				16	46
CA	1	58			1	60	35
CO	1	63				64	34
CT			19	150		169	15
DE		3	1			4	47
FL	1	67				68	31
GA	1	159				160	16
HI		4				4	48
IA	1	99	8			108	20
ID	1	44				45	38
IL	1	102	920			1023	6
IN	1	92	1008			1101	5
KS	1	105				106	21
KY	1	120				121	18
LA	1	70				71	29
MA	1		39	312		352	10
MD	1					1	49
ME			492			492	8
MI	1		267	1245		1513	3
MN	1	87	9			97	23
MO	1	114	1			116	19
MS	1	82	301			384	9
MT	1					1	50
NC	1	100				101	22
ND	1	53	361	1380		1795	2
NE	1	93				94	25
NH	1		259			260	11
NJ			335	232		567	7
NM	1	33	101			135	17
NV	1	17				18	45
<b>NY</b>	<b>1</b>	<b>2</b>	<b>61</b>	<b>920</b>	<b>215</b>	<b>1199</b>	4
OH	1	88				89	26
OK	1	77				78	27
OR	1	36				37	41
PA		67				67	32
RI			8	31		39	40
SC	1	46				47	37
SD	1	65				66	33
TN	1	95	1			97	24
TX					253	253	12
UT	1	29				30	42
VA	2	95	40	91		228	14
VT	1		251			252	13
WA	1	39				40	39
WI	1		584	1255	6	1846	1
WV	1	55				56	36
WY	1	23				24	44

Source: IAAO (2000) "Property Tax Policies and Administration in Canada and the United States."

Table 13: Changes in the Number of Assessing Units by State from 1991 to 1999

State	1999		1991		State	1999		1991	
	NO.	Units <sup>a</sup>	NO.	Units <sup>a</sup>		NO.	Units <sup>a</sup>	NO.	Units <sup>a</sup>
AL	68	C	67	C	MT	1	S	56	C
AK	26	C,M	26	C, M	NE	94	C	93	C
AZ	16	C	15	C	NV	18	C	17	C
AR	76	C	75	C	NH	260	M	259	C, M, T
CA	60	C	58	C	NJ	567	M, T	567	M
CO	64	C	63	COUNTY	NM	135	C, M	33	C
CT	169	M, T	167	M, T	<b>NY</b>	<b>1199</b>	C, M, T, V	<b>1328</b>	C, M, T, V
DE	4	C, M	4	C, M	NC	101	C	100	C
FL	68	C	67	C	ND	1795	C, M, TS	1800	M, TS
GA	160	C	159	C	OH	89	C	88	C
HI	4	C	4	C	OK	78	C	77	C
ID	45	C	44	C	OR	37	C	36	C
IL	1023	C, TS	969	C, TS	PA	67	C	67	C
IN	1101	C, T	1008	T	RI	39	M, T	39	M, T
IA	108	C	111	C	SC	47	C	46	C
KS	106	C	105	C	SD	66	C	66	C
KY	121	C	120	C	TN	97	C	100	C, M
LA	71	C	70	C	TX	253	C <sup>b</sup>	253	C
ME	492	M	492	M	UT	30	C	29	C
MD	1	S	1	S	VT	252	S, M	251	M, T
MA	352	M, T, TS	351	M, T, TS	VA	228	C, M, T	135	C, M
MI	1513	M, T, TS	1527	M, T, TS	WA	40	C	39	C
MN	97	C, M	2713	C, M, T, TS	WV	56	C	55	C
MS	384	C, M	82	C	WI	1846	M, T	1893	C, M, T, TS
MO	116	C	115	C	WY	24	C	23	C
Notes:									
<sup>a</sup>	S: State								
	C: Counties								
	M: Municipalities								
	T: Towns								
	TS: Townships								
	V: Villages								
<sup>b</sup>	Consolidated Counties.								
Sources									
1999:	IAAO (2000), "Property Tax Policies and Administration in Canada and the United States."								
1991:	IAAO (1990, 1991), "Taxonomy of Administrative and Legal Features of States and Provinces of the United States and Canada."								

level assessment. The past centralization trend (ACIR, 1963; Chicoine and Giertz, 1986), in which many states, including Iowa, Pennsylvania, South Dakota, Nebraska, and Minnesota, substantially reduced the number of assessing units, thereby increasing the size of assessing units, shows that state efforts to centralize assessing functions are still continuing.

In New York State approximately 10 percent of assessing units were reduced during this period. Looking at Table 14, which gives time series information, we see the consistent trend toward reducing the total number of assessing units, and increasing the number of assessing units that share multi-jurisdictional assessors, who have more specialized expertise. The reduced number of assessing units is mainly due to the fact that substantial number of villages (348 out of 554) terminated their status as assessing units, recognizing the advantages of town level assessment (SBRPS, 2000). Also, very recently, the Coordinated Assessment Aid Program was initiated by ORPS to encourage assessing units, especially town level units, to combine their assessing functions. As of January 1, 2000, 73 assessing units had been combined into 31 units (SBRPS, 2000). These encouraging figures could be misleading to some extent. First, most of the small towns and villages are still serving as assessing units. Second, OPRS policies for coordinated assessment may only be encouraging consolidation of some jurisdictions that are trying to improve their systems, leaving most of the jurisdictions with low quality assessment unchanged.

Why does the size of an assessing unit matter? At least two rationales have been emphasized in the literature and by practitioners. Economies of scale might be the most compelling reason for county or higher level assessment (e.g., ACIR, 1963; Stiles, 1967;

Table 14: Changes in the Number of Assessing Units in New York State

Year	Total No. of Ass. Units	Percent Change	Assessing Units with Multi-Jurisdictional Assessors <sup>a</sup>	
			No. of Assessing Units	Number of Assessors
1983	1546		N/A	N/A
1987	1435	-7.18%	144	59
1992	1294	-9.83%	190	74
1997	1177	-9.04%	361	133
1998	1164	-1.10%	368	132
1999	1147	-1.46%	398	140
Note: <sup>a</sup> Assessing units that hire assessors who are in charge of multiple assessing units.				
Source: SBRPS (2000)"2000 Report on Effectiveness of State Technical and Financial Assistance Programs for Assessment Administration."				

Sjoquist and Walker, 1999). Historically, the primary reason given for the poor assessment quality of local assessing units, has been the lack of adequate resources for small assessing units to effectively perform the assessing responsibilities (Jensen, 1931). Furthermore, larger assessing units can benefit from specialization by hiring assessors with a functional expertise in each class of property (e.g., industrial, commercial, or residential assessment).

Although it has not been discussed in the academic literature very often, the practitioners in the field almost unanimously state that the primary drawback is the vulnerability of small assessing units to political influences (Gaskell, 2002; Martins, 2002). Complaints about assessment values can affect, through political processes, assessors' professional judgment.

At present, there are two county-level assessing units in New York State, Nassau County and Tompkins County. The processes that those counties took to become county wide assessing units are different. In 1981, as a response to the court case of *Hellerstein v. the Town of Islip (1975)*, New York State established a unique assessment system for Nassau County and New York City to sanction the *de facto* practices of assessing real properties in the two jurisdictions. The main component of the provisions is to freeze the tax shares among classes (Class 1: One, two, and three family residential real property, plus condominiums; Class 2: Residential Property not in Class 1; Class 3: Utility real property; and Class 4: Real Property not in Classes 1, 2, or 3)<sup>26</sup>. In contrast, Tompkins County chose to be a countywide assessing unit in 1970 with the consensus of 1 city (Ithaca), 9 towns and 5 villages. The following comments by Jay Franklin (2002), the

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<sup>26</sup> For detailed information about the assessment system of Nassau County, refer to Netzer and Berne (1995).

assessor of Tompkins County, clearly show the typical attitude of field experts toward the highly decentralized assessing system in New York State.

“We had the foresight to see that they could maintain a higher standard of the assessment function at a fraction of cost if we were to consolidate 15 municipalities’ assessing offices into 1 central location... Besides the cost savings, we felt that we could take the politics out of the assessment function if it was taken from the municipalities. Now there is very little leeway in the assessment function.”<sup>27</sup>

Another decentralized feature that hinders the state’s moving toward centralized assessment is the localized assessment of utility and railroad properties. New York State<sup>28</sup> is one of only 4 states<sup>29</sup> (Alaska, Maine, New York, and Texas), in which the assessment of both utility and railroad properties is performed by local assessing units (State Board of Equalization and Assessment (SBEA), 1993). Decentralized assessment of utilities and railroads combined with no state mandated assessment standard renders enormous variation in the taxing powers of local jurisdictions. Some local governments receive substantial tax base windfalls from this practice, which make elimination of it difficult unless adequate compensation is provided. Substantial shifts in tax bases and the apportionment of assessment values among local governments, when the statewide assessment is introduced, may be one of the critical issues New York State should deal with. Although New York State realizes the problem, it doesn’t seem that the State has enough motivation to push toward centralized assessment systems. SBEA concludes its

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<sup>27</sup> As evidence, he mentioned the fact that Tompkins County was maintaining 100 percent market value standard.

<sup>28</sup> The State values all “special franchise” properties, and also establishes value ceilings on railroads.

<sup>29</sup> In Florida and New Hampshire, state governments assesses railroad and local governments assesses utilities; In Vermont, railroads are assessed by the state and the state also provides advisory appraisals on utility properties; In all other states, state governments assess both types of properties.

survey of railroad and utility taxation practices among states (1993) by pointing out this issue.

“Based on the research contained in this report, it appears that unitary assessment and apportionment of value is both conceptually and practically sound. For a variety of reasons including efficiency, professionalization, data compilation, and statewide consistency, it appears to be preferable to the duplicative, poorly understood, and fragmented system now employed in New York.”

## **6. Overview of Empirical Sections**

The following part of the essay attempts to establish a comprehensive model to explain the determinants of assessment uniformity. As covered in the first part of the essay, the major property tax administration components – assessment standard, revaluation, and assessing units – could be key variables that would improve assessment uniformity. While there has been substantial improvement in assessment uniformity in New York since the 1990s, there are still many assessing units that suffer from low assessment uniformity measured by COD. Unfortunately, the data from the 1998 Market Value Survey, which is the most recent data available, are not adequate for the empirical study. As explained in section 4, SBRPS changed its policy excluding the assessing units that have performed reassessment within three years of the survey base year.

Consequently, 386 units are excluded in 1998 Market Value Survey. The 1992 Market Value Survey is the latest survey that includes almost all town and city assessing units in New York<sup>30</sup>. Including all the assessing units is critical for the empirical study in that 1) it is hard to accept that the assessment uniformity in the assessing units that performed reassessment within the past three years prior to the survey year is all in the acceptable range, 2) even if this is so, including the excluded units eliminates the potential sample

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<sup>30</sup> The Market Value Survey excludes village assessing units.

selection bias that might emerge if they are excluded. Given that assessment uniformity has improved considerably since 1992, the model and estimates using the 1992 data still has very important implications. Basically, the purpose of this empirical research sheds light on how assessment uniformity would improve if the state reforms the critical property tax administration components.

The state policy of New York regarding property tax administration is shifting its policy orientation to encouraging the jurisdictions that have had relatively good assessment quality or at least have the intention to achieve better quality, by providing incentives such as state aid for attainment aid<sup>31</sup> and maintenance aid,<sup>32</sup> for boosting up the jurisdictions with relatively low assessment uniformity (Gaskell, 2002). This is primarily due to the fact that New York State does not have legal provisions that enforce assessing units to meet the assessment uniformity standard established by the State. Lack of legal standards on assessment and unnecessarily many local assessing units have been the main source of a number of problems New York State is facing. Considering assessment uniformity in many assessing units still needs considerable improvement, the estimation results of this study would suggest a way for state policymakers to push for leveling up assessment uniformity in those assessing units.

## **7. Research Model and Hypotheses**

The research model consists of two main parts. One is to incorporate key property tax administration components reviewed in the first part of the essay. The second part

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<sup>31</sup> One-time payments of up to ten dollars per parcel to facilitate the steps necessary to carry out a complete revaluation.

<sup>32</sup> This aid is offered to qualifying municipalities to maintain equitable rolls in post-revaluation years.

suggests a monitoring pressure model that explains the impacts of property owners' pressure on assessor's performance.

Since Geraci and Plourde's (1976) landmark work, scholars have tried to explain the variation of assessment uniformity using a set of explanatory variables that include 1) the individual characteristics of assessors, 2) the available resources for assessment, 3) the nature and difficulty of the local assessment task, and 4) the institutional features of the assessing units (e.g., Geraci and Plourde, 1976; Bowman and Mikesell, 1990).<sup>33</sup> The existing studies tend to treat the assessment function as a mechanical process, the quality of which is largely determined by assessors' characteristics and housing market variations (e.g., Giertz and Chicoine, 1990). Some studies, however, explored the impacts of critical institutional variation, such as size of assessing units (Chicoine and Giretz, 1988) and assessment cycles (Mikesell, 1980), which have significant policy implications. Several studies examined the impacts of local fiscal factors such as effective tax rates (e.g., Borland and Lile, 1980; Bowman and Butcher, 1986). Nonetheless, there are some important limitations with the existing studies. First, the number of property tax administration factors examined in one-state studies is limited primarily because of a lack of within state variation.<sup>34</sup> Second, except for the case of effective tax rate, no explicit attention is given to the influence of residents' monitoring on assessor's performance. This paper expands on previous research by developing a model that incorporates the impacts of three key property tax administration components

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<sup>33</sup> For the complete review of this literature, see Bowman and Mikesell (1990).

<sup>34</sup> None of studies performed the panel data analysis and state-level analysis is quite common at this time. Some nationwide studies suffer from various institutional differences across states which are hard to be controlled in the study.

and resident monitoring on assessor's performance. The proposed research model for this study is as follows.

$$U = f(I, M, A, E) \quad (1)$$

Where:

- U** = Assessment Uniformity measured by  $-\ln(\text{COD})$
- I** = Property Tax Administration Components  
(Number of Parcels in an Assessing Jurisdiction)  
(Actual Equalization Rate)  
(Revaluation Lag or Revaluation Frequency)
- M** = Monitoring Pressure Variables  
(Median Property Value as a Share of Median Income)  
(Median Tax Share)  
(Ratio of State Aid to Total Expenditure)  
(Share of Adults with College or Higher Education)
- A** = Assessor Quality and Characteristics  
(Dummy for Elected Assessor, Assessor Salary)
- E** = Environment Variables for Assessment

### 7.1. Dependent Variable

The dependent variable in the model is the minus value of log of COD. The reason for taking the log form of COD is to reflect the fact that it is much harder to improve assessment uniformity once an assessing unit is already maintaining high assessment uniformity. Taking the minus value to the log of COD makes it easier to interpret as an assessment accuracy measure, because an increase in this measure implies an improvement in assessment uniformity. The uniformity measure is constructed based on the COD measure in the 1992 Market Value Survey. As described in the section 4, SBRPS reports CODs of assessing units as a measure of assessment quality in the Market

Value Survey every other year. Although the COD data from the Market Value Survey is the only source for measuring assessment uniformity, its reliability depends on sampling methods and sample size. When SBRPS uses the sales ratio study, assessment ratio critically depends on where the sales transactions occurred in the specific year. If the sales transactions do not represent property values in diverse areas in a relatively heterogeneous assessing jurisdiction, the COD based on the sales information might be biased. When SBRPS uses CAMA, the professional judgment sampling is used to make the sample represent diverse types of property in an assessing unit. On average, the sample size is less than 5 percent. It is uncertain that the sample size is enough to produce a reliable measure of COD, because any guidelines recommended by IAAO or comparison with practices in other states are not available.

## 7.2. Property Tax Administration Components

The first group of hypotheses comes from the key property tax administration components. As reviewed in the first part of this essay, unique structure of the key property tax administration components in New York State produce substantial variations in the key administration variables, assessment standard, revaluation, and assessing units. Although this essay is not the first to examine the impacts of the key administration variables, it is the first to include all three variables in the model. The key hypotheses related to the administration factors include:

*H1: the longer the reassessment lag period, the lower the quality of assessment.*

*H2: the higher the average assessment ratio, the higher the quality of assessment.*

*H3: the greater the number of parcels in an assessing jurisdiction, the higher the quality of assessment.*

The impact of reassessment on assessment quality seems quite obvious. Rather, the driving force for reassessment decision would be a more interesting topic. I will explain about the first stage model for reassessment in the estimation method section. The hypothesis (*H2*) captures a partial impact of nominal assessment ratio and a partial impact of reassessment lag because the independent variable used for this hypothesis is the average assessment ratio instead of nominal assessment ratio. This is due to the fact that the reassessment lag variable in the first hypothesis does not fully control for impact of reassessment because of different types of reassessment methods.

Three reassessment methods are typically used. First, in the mass cyclical reassessment, all properties are assessed in a particular year every two to ten years. The longer the interval between assessments, the more disparity in assessment ratios. Second, in the rotating segmental reassessment, a specified fraction of properties are reassessed each year. If assessments are conducted continually this means each property is reassessed every few years. The last valued taxpayers will tend to have higher assessment ratios (in a market with increasing property values), but they will be the last valued taxpayers for only a short time. The third method is annual reassessment. Annual property inspections are often not feasible. However, the effect of characteristics identified from the last inventory (including neighborhood) on property value can be determined using regression analyses of current sales. Thus, market changes can be reflected in updated assessment values. The different methods produce different results in

assessment ratio and thereby CODs. Unfortunately, the reassessment activity data provided by ORPS do not accurately distinguish these three specific types of reassessment methods. Therefore, in the model, the reassessment activity means any of these reassessment activities. The lack of detailed information on reassessment methods used by assessing units makes it hard to fully control for the impact of reassessment on assessment uniformity.

The compound variable, average assessment ratio, therefore, captures the impact on COD of three factors: nominal assessment ratio, reassessment lag; and house markets. Hopefully, after controlling for reassessment lag and house value changes, it is expected that the average assessment ratio captures the impact of nominal assessment ratio.

The third hypothesis (*H3*) is to examine the economies of scale in property tax administration. Currently, assessing units in New York State include villages and small towns. Shifting the primary assessing units to counties from towns, cities, and villages implies significant increases in number of parcels to be assessed in an assessing unit. The potential improvement of assessment uniformity by increasing the number of parcels will be examined.

### 7.3. Monitoring Pressure Factors

The monitoring pressure variables are constructed to capture the incentives of residents to monitor and put pressure on assessors. Specifically, three hypotheses are presented.

*H4: the greater the median property value as a share of median income, the higher the quality of assessment.*

*H5: the greater the median tax share, the higher the quality of assessment*

*H6: the greater the ratio of state aid to total expenditure, the lower the quality of assessment*

The hypothesis *H4* argues that in an assessing unit with a greater median property value as a share of median income, residents are more concerned about assessment errors and thereby put more monitoring pressure on assessor performance. This hypothesis does not capture simply the dollar consequence of a given assessment error but it considers how big the burden is considering resident's ability to pay. By including the share of adults with college or higher education as a separate variable, the correlation between income and education is ruled out.

The assessor performance could be affected by the share of any additional dollar or revenue that must be contributed by residents (*H5*). The larger the tax share, the greater the bite that any tax increase takes out of residents' pockets. A large tax share fosters residents' vigilance and therefore promotes assessment quality. For example, an assessing unit, with substantial commercial and industrial property, has a relatively lower median tax share. The lower median tax share would decrease incentives of residents to monitor an assessor's performance and eventually could lead to poorer assessment performance.

In a similar way, state aid could also affect residents' incentives to monitor assessment performance. In an assessing unit where a relatively higher percentage of revenue comes from the state, residents have few incentives to monitor assessment performance because less money comes out of their pocket for providing local public service.

#### 7.4. Assessor Quality and Assessment Environment

As discussed, the previous research treats variables related to assessor quality, resources availability, and assessment environment as the most important factors for determining assessment quality. Although assessor quality and assessment environment are not the primary focus of this essay, they should be included as important control variables.

### **8. Model Specifications and Data Sources**

The dependent variable is measured by the negative of the natural logarithm of COD in 1992.<sup>35</sup> The natural logarithm of COD is used, as in most of the previous literature, because it fits the increasing relationships between the dependent variable and explanatory variables better than simple COD measure (e.g., Bowman and Butcher, 1986; Chicoine and Giertz, 1988; Bowman and Mikesell, 1978). For example, it is likely that moving from a COD of 15 to 5 is more expensive than from 30 to 20 because lowering COD is much more difficult when the COD level is already quite low. This implies an exponential relationship between COD and assessment effort.

As required by Section 1200 of the Real Property Tax Law, the SBRPS of New York State regularly reports its findings regarding the quality of assessment in New York State following the completion of each of its market value surveys. SBRPS randomly select parcels for the survey and measures CODs by comparing the assessment values reported by the local governments with the estimates of market values for the same

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<sup>35</sup>  $\ln(\text{COD})$  measures the level of assessment uniformity; the higher value of the dependent variable means higher level of uniformity.

parcels. In this context, the market value estimates are appraised values determined by the SBRPS personnel for the randomly selected parcels.

For two reasons, the COD data for constructing the dependent variable are based on the 1992 Market Value Survey.<sup>36</sup> First, the major source of data for independent variables is the Census of Population and Housing, so in order to take advantage of using the census data, it is appropriate to select a year as close as possible to the nearest census year. Second, ORPS does not provide the COD data after 1992 for those assessing units which already conducted revaluation within 3 years before the survey date. ORPS assumes that their assessment quality will be within the acceptable range. Therefore, after the 1992 Market Value Survey, a number of assessing units are excluded, which comprises 39 percent of all assessing units in the most recent survey in 1998. The market survey was conducted only for municipalities and towns, so villages were excluded from the analysis. The final number of observations is 1015, after dropping some observations because of unavailable data for some variables.

Tables 15 and 16 shows the specifications and data sources for variables used for the empirical model. As property tax administration components, five independent variables are constructed: 1) *Reassessment lag from 1992*; 2) *Reassessment frequency between 1982 and 1992*; 3) *Log of number of residential parcels*; 4) *Dummy for no revaluation*; 5) *Equalization rate*. The *reassessment lag* and *reassessment frequency* are alternatively used in the empirical model.

The reassessment variables come from two reports published by ORPS:

“Reassessment Project Activity in New York State 1984-1997,” and “Revaluation 1970-

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<sup>36</sup> By the requirement of RPTL (section 1200), the New York State Board of Real Property Tax Service regularly reports its findings regarding the quality of assessment in New York following completion of the market value survey.

Table 15: Variable Specifications (New York Assessing Units in 1992)

Variables	Specification
Dependent Variable	
Assessment Uniformity	Minus of log of COD
Independent Variables	
(Property Tax Administration Variables)	
Reassessment lag from 1992	Years between the last reassessment and 1992
Reassessment frequency between 1982-1992	Number of reassessments between 1982 and 1992
Log of number of residential parcels	Log of number of residential parcels
Dummy for no revaluation (yes=1)	Yes if no revaluation between 1982 and 1992
Equalization rate	Assessed value divided by full value
(Monitoring Pressure Variables)	
Median house value as a share of median income	Median house value divided by median income
Median tax share	Median house value divided by total property value
Ratio of state aid to total expenditure	Total state aid divide by total expenditure
Share of adults with college or higher education	No. of adults with colleage or higher education divided by total adults
Share of commercial and industrial property	Total commercial and industrial property value divided by total property value
Log of interaction between income and tax share	log of (median income multiplied by median tax share)
(Assessor Quality and Characteristics)	
Log of assessor salary	Log of assessor salary
Dummy for elected assessor (yes=1)	Yes if elected assessor
(Environment Variables)	
Share of houses in urbanized area	(No of houses in a urbanized area) divided by total number of houses
Share of high value houses	(No of houses with value of \$250,000 or higher) divided by total number of houses
Ratio of housing unit change between 1980 and 1990	(Change of number of houses between 1980 and 1990) divided by no. of 1980 houses
Ratio of median house value change between 1980 and 1990	1990 median house value divided by 1980 median house value
Share of vacant houses	No of vacant houses divided by total number of houses
Population density	Total population divided by square miles of area
Share of renter occupied houses	No of renter occupied houses divided by total number of houses
(Instruments)	
County average reassessment lag	Arithmetic average of town/city reassessment lag in a county
County average reassessment frequency (between 1982-1992)	Arithmetic average of town/city reassessment frequency in a county
Share of no reassessment assessing units in a county	Arithmetic average of town/city no reassessment dummy in a county
County average equalization rate	Arithmetic average of town/city equalization rates in a county
County population	Total county population
Log of county average wage (manufacturing industry)	Log of county average wage in the manufacturing industry
Log of county average wage (all types of occupation)	Log of county averag wage of all types of occupation

Table 16: Data Sources

Variables	Data Source	
Dependent Variable		
Assessment Uniformity	1992 Market Value Survey	(ORPS) <sup>a</sup>
Independent Variables		
(Property Tax Administration Variables)		
Reassessment lag from 1992	Reassessment Activities	(ORPS) <sup>a</sup>
Reassessment frequency between 1982-1992	Reassessment Activities	(ORPS) <sup>a</sup>
Log of number of residential parcels	1992 Market Value Survey	(ORPS) <sup>a</sup>
Dummy for no revaluation (yes=1)	Reassessment Activities	(ORPS) <sup>a</sup>
Equalization rate	Financial data for local governments	(OSC) <sup>b</sup>
(Monitoring Pressure Variables)		
Median house value as a share of median income	1990 Census	(Census)
Median tax share	1990 Census & Financial data for local governments	(OSC) <sup>b</sup>
Ratio of state aid to total expenditure	Financial data for local governments	(OSC) <sup>b</sup>
Share of adults with college or higher education	1990 Census	(Census)
Share of commercial and industrial property	Real property tax assessment data	(ORPS) <sup>a</sup>
Log of interaction between income and tax share	1990 Census & Financial data for local governments	(Census)
(Assessor Quality and Characteristics)		
Log of assessor salary	Local government personnel data	(OSC) <sup>b</sup>
Dummy for elected assessor (yes=1)	Assessor profile data	(ORPS) <sup>a</sup>
(Environment Variables)		
Share of houses in urbanized area	1980 and 1990 Census	(Census)
Share of high value houses	1980 and 1990 Census	(Census)
Ratio of housing unit change between 1980 and 1990	1980 and 1990 Census	(Census)
Ratio of median house value change between 1980 and 1990	1980 and 1990 Census	(Census)
Share of vacant houses	1980 and 1990 Census	(Census)
Population density	1980 and 1990 Census	(Census)
Share of renter occupied houses	1980 and 1990 Census	(Census)
(Instruments)		
County average reassessment lag	Reassessment Activities	(ORPS) <sup>a</sup>
County average reassessment frequency (between 1982-1992)	Reassessment Activities	(ORPS) <sup>a</sup>
Share of no reassessment assessing units in a county	Reassessment Activities	(ORPS) <sup>a</sup>
County average equalization rate	Financial data for local governments	(OSC) <sup>b</sup>
County population	1990 Census	
Log of county average wage (manufacturing industry)	Local government economic condition	(OSC) <sup>b</sup>
Log of county average wage (all types of occupation)	Local government economic condition	(OSC) <sup>b</sup>
Notes: <sup>a</sup> Office of Real Property Tax Service		
<sup>b</sup> Office of State Comptroller's Office		

1987.” Unfortunately, 1970 is the latest year of revaluation activities ORPS keeps track of, and the number of units that haven’t conducted revaluation from 1970 to 1992 is as large as 278. The *dummy for no revaluation*, therefore, captures impact of no reassessment in those units. To examine the impact of reassessment two variables are constructed, *reassessment lag from 1992* and *reassessment frequency between 1982 and 1992*. Since *reassessment lag from 1992* and *reassessment frequency between 1982 and 1992* are highly correlated and thereby cause the multicollinearity problem, each of the reassessment variables is used in a separate model. I expect that both variables will have significant negative effects on the assessment uniformity.

The data source for *equalization rates* is “financial data for local governments” prepared by the Office of State Comptroller. The variable is constructed as the assessed value divided by the full value estimated by ORPS. In this regard, equalization rates mean average actual assessment ratios based on the market value surveys. One should distinguish between the nominal assessment ratio each assessing unit applies and the actual assessment ratio based on the true market value (Bowman and Mikesell, 1990). Each assessing unit in New York State applies their own assessment ratio to the appraised values of properties. These assessment ratios are not comparable, since the appraisal values may not be the market values at a given roll year due to the differentiated reassessment activities. Ideally, if the reassessment variables in the model completely control for impact of revaluation, the coefficient on the equalization rate will measure the impact of the nominal assessment ratio on assessment uniformity. As examined, however, the reassessment activity data are not complete in that methods of revaluation are not distinguished in the source data. Obviously, there is a critical disadvantage in using actual

assessment ratio instead of nominal assessment ratio. Because *equalization rates* consist of three components: nominal assessment ratios, reassessment lag, and housing market, the estimated coefficient of the variable does not reveal the pure impact of nominal assessment ratio. Hopefully, controlling for reassessment activity and housing market variations, the coefficient of *equalization rates* would represent the impact of nominal assessment ratio.<sup>37</sup> Data sources for the monitoring pressure variables are 1990 Census and data from OSC and ORPS. Specifications for the variables seem quite obvious. Please refer to Tables 15 and 16.

Table 17 provides the descriptive statistics of variables in the empirical model. The average COD of residential property in 1992 is 17.53, with the maximum of 89.4 and the minimum of 2.6. The average reassessment lag from 1992 is 12.28 years and the average reassessment frequency between 1982 and 1992 is 0.479. The average number of residential parcels, excluding village level assessing units, is 3,304. The average equalization rate is around 50 percent. The average median house value as a share of median income is 2.819 meaning on average, the median house value is three times higher than the median income. In the assessing unit with the maximum value of this variable, the median house value is more than eight times higher than the median income. The share of industrial and commercial property significantly changes the median tax share. On average, the share of non-residential property in an assessing unit is 15.9 percent, but in some assessing units the share goes up to around 90 percent.

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<sup>37</sup> The correlation between equalization rates and reassessment lag is as low as 0.0149, so at least a multicollinearity problem does not arise.

Table 17: Descriptive Statistics (New York Assessing Units in 1992)

	Mean	Standard	Minimum	Maximum
Variables		Deviation		
<b>Dependent Variable</b>				
Assessment Uniformity	-2.724	0.546	-4.494	-0.959
COD of residential property	17.503	9.036	2.610	89.415
<b>Independent Variables</b>				
<b>(Property Tax Administration Variables)</b>				
Reassessment lag from 1992	12.283	10.636	0.000	25.000
Reassessment frequency between 1982-1992	0.479	0.609	0.000	5.000
Log of number of residential parcels	7.307	1.211	2.773	11.616
Number of residential parcels	3,304	6,533	16	110,849
Dummy for no revaluation (yes=1)	0.367	0.482	0.000	1.000
Equalization rate	0.488	0.415	0.012	1.426
<b>(Monitoring Pressure Variables)</b>				
Median house value as a share of median income	2.819	1.458	1.055	8.332
Median tax share	2.048	0.837	0.059	6.802
Ratio of state aid to total expenditure	0.114	0.063	0.010	0.689
Share of adults with college or higher education	0.113	0.077	0.000	0.588
Share of commercial and industrial property	0.159	0.126	0.000	0.921
Log of interaction between income and tax share	10.931	0.673	7.138	12.581
<b>(Assessor Quality and Characteristics)</b>				
Log of assessor salary	10.222	0.814	-1.386	10.911
Dummy for elected assessor (yes=1)	0.229	0.421	0.000	1.000
<b>(Environment Variables)</b>				
Share of houses in urbanized area	0.170	0.354	0.000	1.000
Share of high value houses	0.037	0.082	0.000	0.672
Ratio of housing unit change between 1980 and 1990	0.098	0.294	-0.413	0.638
Ratio of median house value change between 1980 and 1990	1.253	0.660	0.104	3.176
Share of vacant houses	0.190	0.179	0.000	0.906
Population density	597	1,328	1	15,262
Share of renter occupied houses	0.234	0.166	0.035	0.889
<b>(Instruments)</b>				
County average reassessment lag	11.983	6.948	0.143	25.000
County average reassessment frequency (between 1982-1992)	0.484	0.380	0.000	1.800
Share of no reassessment assessing units in a county	0.345	0.307	0.000	1.000
County average equalization rate	0.491	0.293	0.029	1.020
County population	303,323	416,482	5,279	1,321,768
Log of county average salary (manufacturing industry)	10.630	0.314	10.034	11.472
Log of county average salary (all types of occupation)	10.608	0.543	5.400	11.306

## 9. Estimation Methods

Endogeneity of property tax administration variables requires using the two stage least square (2SLS) regression method. Whether an assessing unit revalued or the time since the last revaluation seems to be influenced by the same unobserved factors as is the COD. The political problem caused by failure to revalue gets worse if the most politically active groups, namely high-income groups, gain from this failure. This gain depends on growth in their house values relative to the growth in poor people's house values. Based on this logic, a number of instruments were tested. Specifically, the instruments tested include: 1) Distribution of house values; 2) Changes of house value dispersion between 1980 and 1990; 3) Socio-demographic factors (such as race composition). Unfortunately, none of these variables have significant impacts on *revaluation lag*, *revaluation frequency*, or *dummy for no revaluation* in the first stage model. The failure of accounting for the revaluation activities by the instruments might be due to the fact that the revaluation activities are not easily explained by the cross-sectional variables because the historical context facing each assessing unit could be considerably different. Assessing units performing frequent revaluation might be simply keeping the revaluation cycle determined in the past and it is much harder to break this predetermined cycle because of lack of justification.<sup>38</sup> In contrast, breaking the *status quo*, i.e. initiating revaluation after a long history of no revaluation, could be driven by diverse factors including court orders, intensive appeal from the business sector, or other political factors.

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<sup>38</sup> The town of Manlius has annual assessment cycle, but even the assessor does not know when the annual assessment cycle was determined and there is no annual discussion on whether to revalue or not.

The instruments for reassessment variables used in the model are county average values of the reassessment variables. Considering the fact that county governments are the primary upper level governments that provide many assistants, such as providing property rolls and maps for local governments to perform property tax assessment functions effectively, the instrumental variables are appropriate for the endogenous variables not only conceptually, but also practically.<sup>39</sup>

It also seems that the equalization rate and COD are also likely to be influenced by some of the same unobserved factors. In fact, it could be even more directly influenced. An assessing unit that has a high COD tries to cover it with a low equalization rate. A possible instrument for the equalization rate is growth rate of house values. In an assessing unit that has not revalued for a long period of time, a higher growth rate of house values implies a lower equalization rate. Unfortunately, this instrument does not work very well for the reasons examined above. By the same logic applied in the case of reassessment variables, the county average equalization rates are used for *equalization rates* as an instrument.

Assessor salary also seems to be an endogenous variable. An assessing unit with high assessment quality is more likely to pay higher salary to hire a high quality assessor. Instruments for the assessor salary include county population (wages are higher in larger places) and county average wages in all types of occupations and county average wages in manufacturing industry.

Hausman's specification test was used to test the endogeneity of the variables. Chi-square values for the four models I estimated. The test is designed to determine whether least square model (OLS) yields coefficients that are significantly different from

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<sup>39</sup> Mapping the distribution of assessment qualities shows a geographically concentrated pattern.

those produced by the 2SLS model. The substantially high Chi-square values mean that there is contemporaneous correlation between the endogenous variables and the error term.

## 10. Discussion of the Empirical Results

Four different models (Tables 18 to 23) are examined depending on whether to only include property tax administration variables (partial model) or a full set of explanatory variables (full model) and whether to include revaluation lag or revaluation frequency as a revaluation activity variable. The estimation results in the models with revaluation lag are examined first and then the notable differences in the models with revaluation frequency are presented. Specifically, I estimated the following four models: the partial model with revaluation lag (Table 18); the full model with revaluation lag (Table 19); the partial model with revaluation frequency (Table 21); and the full model with revaluation frequency— are 20.85, 22.45, 22.35, and 22.42, respectively.

The dependent variable for all four models is the minus log of residential COD. Table 18 provides the estimation result of the partial model with revaluation lag. *Revaluation lag* is not significant in the 2SLS model and its standardized impact on assessment uniformity is not as high as expected. This might be due to the fact that a significant portion of assessing units haven't revalued for a long period of time and the average revaluation lag is very long so that the variable, *revaluation lag*, does not capture systematic impact on assessment uniformity. A notable difference between the estimations by 2SLS and OLS is that in the 2SLS model, the coefficient of *dummy for no*

*revaluation* turns out to be significant, while it is not in the OLS model and its standardized impact becomes much greater in the 2SLS model.

In the full model (Table 19), there is no substantial change in the coefficients of property tax administration variables in terms of magnitude of coefficient and its significance. This implies that the coefficients of property tax administration variables are not affected sensitively by including monitoring pressure variables and other control variables. The elasticity of the number of residential parcels is around 0.12 in the partial model (Table 18) and 0.08 in the full model (Table 19). The average number of residential parcels, excluding those in village assessing units, is 3,300. If the state reforms the property tax administration structure, adopting county level assessing units, the average number of residential property increases to 65,000, which is almost 20 times greater than the current average level residential parcels. This implies that if counties become the primary assessing units, the substantially higher assessment uniformity could be achieved.

The key monitoring pressure variables all have statistically significant coefficients. Residents in an assessing unit with a higher median house value as a share of median income more concern about assessment quality because the burden of assessment error on their income is relatively greater than other assessing units. Their vigilance and monitoring pressure on an assessor's performance eventually would result in higher assessment quality. The median tax share is also an important source of incentives for residents to pay attention to the assessment quality. The median tax share is significantly affected by the existence of commercial and industrial properties in an assessing unit. In an assessing with a substantial non-residential property, such as plants, shopping malls,

railroads and utilities, the tax share facing the median resident is substantially lower. Residents in such an assessing unit have fewer incentives to monitor an assessor's performance because relatively less money comes out of their pocket and the impact of assessment error on their income is smaller than other assessing units that do not have substantial non-residential property.

The median tax share is highly correlated with the share of commercial and industrial properties. To capture the genuine effect of residential tax share, not the effect of commercial and industrial properties, another independent variable, *share of industrial and commercial property*, is included in the model. Including this variable is critical to rule out another possible interpretation of the impacts of non-residential property that the existence of substantial industrial and commercial properties distracts assessor's attention from the assessment quality of residential property. Although the coefficient of the variable is not statistically significant, the sign of it might have an interesting interpretation. The minus sign of the coefficient of *share of industrial and commercial property* could mean that after controlling for its impact on assessment performance, a substantial share of industrial and commercial properties still have a negative impact of assessment quality by distracting assessor's attention. However, this interpretation should be taken with caution as the coefficient is not statistically significant.

The minus sign of *log of interaction between tax share and income* implies that the impact of median tax share on assessment uniformity decreases as the median income increases. A possible interpretation of the coefficient is that as the median income increases, the impact of tax shares on monitoring becomes less important. To look at the issue another way, although residents in an assessing unit with a small portion of non-

residential property are facing higher median tax share, the tax burden caused by assessment error is less critical if they have a higher level of income. Therefore, they pay less attention to assessor's performance, eventually leading to low assessment quality.

The estimation results for assessment environment variables reveal different results from the previous research. Most of housing market variables do not have substantial impact on the assessment uniformity. Housing market variables have been regarded as the most important variables affecting the variation of assessment uniformity (e.g., Bowman and Butcher, 1986; Geraci and Plourde, 1976; Schroeder and Sjoquist, 1976; and Chicoine and Giertz, 1988). For example, Giertz and Chicoine's study (1990) reveals that almost 60 percent of the total variation of assessment uniformity can be explained by factors external to assessors, such as housing value changes and housing stock heterogeneity. Such a dramatic difference might be due to the fact that the technology applied for assessment processes, such as computer application and sales data collection, have developed substantially in the past decade.<sup>40</sup>

The same logic can be applied to assessor characteristics. Previously, the body of literature has focused on the assessor characteristics, assessment staffing, tools of assessment, and other environmental variables as significant factors that critically affect assessment uniformity (Bowman and Mikesell, 1990). The results of empirical studies testing these variables are mixed but some have found significant effects (Geraci, 1977; Geraci and Plourde, 1976; Schroeder and Sjoquist, 1976; and Almy, 1977). One caveat is that assessors' characteristics are endogenous in that they are determined indirectly by the preference of residents in an assessing unit. Thus, we cannot separate the true impacts of

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<sup>40</sup> Most influential studies on assessment uniformity were been done in the 1970s and 1980s.

assessors' characteristics and local vigilance on assessment processes.<sup>41</sup> The coefficients of assessor salary in the two full models (Tables 19 and 22) are all statistically significant. However, the resources invested for assessment are not limited to assessor's salary. The expenditures for staffing, computer equipment and other operating expenditures also affect the quality of assessment. Unfortunately, because the data for these variables are not available at this point in time, the empirical models could not include them.

Comparing the adjusted R-squared in the partial model (Table 18) with that in the full model (Table 19), we can find that the property tax administration variables account for a significant portion of assessment uniformity. The monitoring pressure variables provide additional explanation to the model and the other variables have very small explanatory power. Table 20 shows the standardized coefficients of the variables. Among property tax administration variables, the revaluation lag has the biggest standardized coefficient. One standard deviation of revaluation lag decreases assessment uniformity by 0.291 standard deviations. The median tax share has a standardized coefficient of 0.317, which is larger than standardized coefficients for any other explanatory variables. Most of the property tax administration variables and the monitoring pressure variables have standardized coefficients between 0.1 and 0.3, while most of housing market variables have standardized coefficients lower than 0.1.

Tables 21 to 23 show the estimation results from the models with revaluation frequency variables. The coefficients of revaluation frequency (Tables 21 and 22) are

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<sup>41</sup> Our model also fails to correct the endogeneity of assessor salary, since the assessor salary data collected from OSC in New York State is not really reliable, so including a new instrumental variable for the assessor salary distorts the coefficients of other endogenous variables.

bigger than those of revaluation lag (Tables 18 and 19), because the revaluation frequency includes the impact of the dummy for revaluation.

Table 18: Determinants of Residential Assessment Uniformity:  
 Partial model with reassessment lag  
 (New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))				
Variables	2SLS		OLS	
	Coefficients (standard error)	Standardized Coefficients	Coefficients (standard error)	Standardized Coefficients
Reassessment lag from 1992 <sup>b</sup>	-0.008 (0.006)	-0.153	-0.009 (0.003)**	-0.171
Dummy for no revaluation (1=Yes) <sup>b</sup>	-0.331 (0.132)*	-0.293	-0.028 (0.062)	-0.025
Equalization rates <sup>b</sup>	0.479 (0.104)**	0.364	0.699 (13.48)**	0.526
Log of number of residential properties	0.122 (0.011)**	0.272	0.109 (0.011)**	0.242
Constant	-3.634 (0.125)**		-3.741 (0.090)**	
Observations	1015		1015	
Adjusted R-squared	0.43		0.45	
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.				
Notes:				
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.				
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment lag, ratio of no revaluation assessing units in a county, and county average equalization rates.				

Table 19: Determinants of Residential Assessment Uniformity:  
Full model with reassessment lag  
(New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))				
Variables	2SLS		OLS	
	Coefficients	Standard Error	Coefficients	Standard Error
Reassessment lag from 1992 <sup>b</sup>	-0.015	(0.007)*	-0.012	(0.003)**
Dummy for no revaluation (1=Yes) <sup>b</sup>	-0.286	(0.139)*	-0.036	(0.062)
Equalization rates <sup>b</sup>	0.236	(0.119)*	0.629	(0.052)**
Log of number of residential properties	0.084	(0.022)**	0.088	(0.021)**
Median house value as a share of median income	0.043	(0.018)*	0.063	(0.016)**
Median tax share	0.211	(0.041)**	0.256	(0.038)**
Ratio of state aid to total expenditure	-0.970	(0.223)**	-0.920	(0.212)**
Share of adults with college or higher education	1.363	(0.337)**	1.618	(0.317)**
Share of commercial and industrial property	-0.133	(0.140)	-0.043	(0.132)
Log of interaction between income and tax share	-0.161	(0.068)*	-0.243	(0.062)**
Log of assessor salary <sup>b</sup>	0.077	(0.024)**	0.056	(0.015)**
Dummy for elected assessor (1=Yes)	0.024	(0.035)	-0.017	(0.032)
Share of houses in urbanized area	0.161	(0.062)**	0.142	(0.058)*
Share of high value houses	-0.261	(0.505)	-0.122	(0.478)
Ratio of housing unit change between 1980 and 1990	0.552	(0.337)	0.607	(0.322)
Ratio of median house value change between 1980 and 1990	-0.025	(0.848)	1.289	(0.753)
Share of vacant houses	-0.29	(0.155)	-0.313	(0.147)*
Population density	-4.0E-05	(1.0E-05)**	-5.0E-05	(1.0E-05)**
Share of renter occupied houses	-0.196	(0.096)*	-0.182	(0.092)*
Constant	-2.129	(0.675)**	-1.502	(0.623)*
Observations	1015		1015	
Adjusted R-squared	0.51		0.55	
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.				
Notes:				
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.				
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment lag, share of no revaluation assessing units in a county, and county average equalization rates, county population, log of county average wage in manufacturing industry, log of county average wage in all types occupation.				

Table 20: Determinants of Residential Assessment Uniformity:  
 Full model with reassessment lag (Standardized Coefficients)  
 (New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))		
Variables	Standardized Coefficients	
	2SLS	OLS
Reassessment lag from 1992 <sup>b</sup>	-0.291	-0.226
Dummy for no revaluation (1=Yes) <sup>b</sup>	-0.253	-0.032
Equalization rates <sup>b</sup>	0.179	0.477
Log of number of residential properties	0.180	0.189
Median house value as a share of median income	0.112	0.164
Median tax share	0.317	0.386
Ratio of state aid to total expenditure	-0.113	-0.107
Share of adults with college or higher education	0.158	0.188
Share of commercial and industrial property	-0.030	-0.010
Log of interaction between income and tax share	-0.192	-0.291
Log of assessor salary <sup>b</sup>	0.116	0.085
Dummy for elected assessor (1=Yes)	0.018	-0.013
Share of houses in urbanized area	0.103	0.091
Share of high value houses	-0.017	-0.008
Ratio of housing unit change between 1980 and 1990	0.060	0.066
Ratio of median house value change between 1980 and 1990	-0.001	-0.072
Share of vacant houses	-0.093	-0.100
Population density	-0.101	-0.124
Share of renter occupied houses	-0.059	-0.054
Constant		
Observations	1015	1015
Adjusted R-squared	0.51	0.55
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.		
Notes:		
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.		
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment lag, ratio of no revaluation assessing units in a county, and county average equalization rates, county population, log of county average wage in manufacturing industry, log of county average wage in all types occupation.		

Table 21: Determinants of Residential Assessment Uniformity:  
 Partial model with reassessment frequency  
 (New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))				
Variables	2SLS		OLS	
	Coefficients (standard error)	Standardized Coefficients	Coefficients (standard error)	Standardized Coefficients
Reassessment frequency <sup>b</sup> between 1982-1992	0.172 (0.053)**	0.192	0.124 (0.027)**	0.138
Equalization rates <sup>b</sup>	0.398 (0.100)**	0.303	0.661 (0.050)**	0.504
Log of number of residential properties	0.122 (0.011)**	0.271	0.109 (0.010)**	0.241
Constant	-3.741 (0.103)**		-3.853 (0.084)**	
Observations	1015		1015	
Adjusted R-squared	0.43		0.46	
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.				
Notes:				
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.				
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment frequency ratio of no revaluation assessing units in a county, and county average equalization rates.				

Table 22: Determinants of Residential Assessment Uniformity:  
 Full model with reassessment frequency  
 (New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))				
Variables	2SLS		OLS	
	Coefficients	Standard Error	Coefficients	Standard Error
Reassessment frequency between 1982-1992 <sup>b</sup>	0.204	(0.056)**	0.136	(0.027)**
Equalization rates <sup>b</sup>	0.186	(0.114)	0.613	(0.050)**
Log of number of residential properties	0.078	(0.022)**	0.084	(0.021)**
Median house value as a share of median income	0.041	(0.018)*	0.062	(0.016)**
Median tax share	0.197	(0.041)**	0.250	(0.037)**
Ratio of state aid to total expenditure	-0.928	(0.223)**	-0.893	(0.211)**
Share of adults with college or higher education	1.201	(0.342)**	1.520	(0.316)**
Share of commercial and industrial property	-0.129	(0.139)	-0.036	(0.131)
Log of interaction between income and tax share	-2.080	(0.037)*	-3.820	(0.281)**
Log of assessor salary <sup>b</sup>	0.066	(0.024)**	0.054	(0.015)**
Dummy for elected assessor (1=Yes)	0.041	(0.036)	-0.009	(0.032)
Share of houses in urbanized area	0.201	(0.063)**	0.167	(0.058)**
Share of high value houses	-0.256	(0.503)	-0.137	(0.475)
Ratio of housing unit change between 1980 and 1990	0.566	(0.337)	0.616	(0.320)
Ratio of median house value change between 1980 and 1990	-0.349	(0.854)	-1.522	(0.752)*
Share of vacant houses	-0.322	(0.155)*	-0.332	(0.146)*
Population density	0.000	(1.0E-05)**	0.000	(1.0E-05)**
Share of renter occupied houses	-0.158	(0.096)	-0.157	(0.091)
Constant	-2.355	(0.679)**	-1.687	(0.620)**
Observations	1015		1015	
Adjusted R-squared	0.51		0.55	
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.				
Notes:				
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.				
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment frequency, share of no revaluation assessing units in a county, and county average equalization rates, county population, log of county average wage in manufacturing industry, log of county average wage in all types occupation.				

Table 23: Determinants of Residential Assessment Uniformity:  
 Full model with reassessment frequency (Standardized Coefficients)  
 (New York Assessing Units, 1992<sup>a</sup>)

Dependent variable: Residential assessment uniformity (-ln(COD))		
Variables	Standardized Coefficients	
	2SLS	OLS
Reassessment frequency between 1982-1992 <sup>b</sup>	0.229	0.152
Equalization rates <sup>b</sup>	0.141	0.465
Log of number of residential properties	0.168	0.181
Median house value as a share of median income	0.108	0.162
Median tax share	0.296	0.376
Ratio of state aid to total expenditure	-0.108	-0.104
Share of adults with college or higher education	0.140	0.177
Share of commercial and industrial property	-0.029	-0.007
Log of interaction between income and tax share	-0.170	-0.282
Log of assessor salary <sup>b</sup>	0.099	0.082
Dummy for elected assessor (1=Yes)	0.032	-0.007
Share of houses in urbanized area	0.129	0.107
Share of high value houses	-0.016	-0.009
Ratio of housing unit change between 1980 and 1990	0.062	0.067
Ratio of median house value change between 1980 and 1990	-0.019	-0.085
Share of vacant houses	-0.103	-0.106
Population density	-0.117	-0.135
Share of renter occupied houses	-0.047	-0.047
Constant		
Observations	1015	1015
Adjusted R-squared	0.51	0.55
*statistically significant from zero at 5 percent ** statistically significant from zero at 1 percent.		
Notes:		
<sup>a</sup> Using residential property with only property tax administration variables and reassessment lag.		
<sup>b</sup> Treated as endogenous variables. Instruments include county average reassessment frequency, share of no revaluation assessing units in a county, and county average equalization rates, county population, log of county average wage in manufacturing industry, log of county average wage in all types occupation.		

## 11. Conclusion

Overall, this essay reconfirms the argument that a state can improve its assessment quality by reforming the key property tax administration components. Without achieving assessment uniformity, the local “politics” that determine the level of public service and thereby property tax cannot function very well because the individual property owners’ burdens to provide the enhanced level of public service are “unfairly” distributed simply by poor property tax administration. The current situation of property tax administration in New York State seriously violates two major principles of the tax system, horizontal and vertical equity. More importantly, inaccurate assessments undermine “public faith” in the property tax and local governments.

Based on the evaluation on the three key property tax administration factors, the recommendations for improving property tax administration are straightforward. Full market value standard, specific revaluation cycle, and county- or state-level assessment functions are prerequisite components for high level of assessment uniformity. All of these recommendations are essentially efforts to minimize “politics” concerning property tax administration. Although the recommendations are quite straightforward, none of existing empirical studies have attempted to explore the impact of all these institutional factors at the same time and many of them are suffering from methodological problems including the endogeneity of some key institutional variables.

Another value of this study is that it sheds light on the behavior of residents through incentives facing them to monitor assessor’s performance. In contrast to the previous studies that take the assessment as a mechanical process, it shows that

monitoring pressure by residents on assessor's performance critically affect assessment quality.

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## Appendix 1: Value and Other Related Concepts Used in Property Tax Administration

Value Concept	Meaning
Market Value	The most probable price (in terms of money) which a property should bring in a competitive and open market.
	All the value concepts in the Table 3 eventually mean the market value. For example, a “true cash value” means an estimated cash-equivalent sales price in comparison with sold comparable properties.
Appraisal Value	The money value of property estimated by an assessor. For tax levy purposes, the appraisal value is assumed as market value.
Assessed Value	A value set on property by a government as a basis for levying tax. It is the appraisal value multiplied by the assessment ratio.
Assessment Ratio (Level of Assessment)	The nominal ratio of assessed value to market value set by a government. This is the legally required assessment ratio.
Actual Assessment Ratio	The actual ratio of assessed value to market values. The discrepancy between nominal assessment ratio and actual assessment ratio occurs when appraisal values do not reflect market value accurately.
Equalization	The process by which a government attempts to ensure that all property under its jurisdiction is assessed at the same assessment ratio or at the ratio required by law.
Equalization Rates	The rates that make equalized property values within a jurisdiction (e.g., within state).
	In case of New York, the State government performs market value survey and based on the survey results, estimates actual assessment ratios. The actual assessment ratios are used as equalization rates.

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