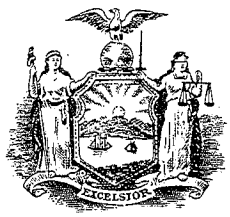
Volatility In New York's Residential Assessment Ratios



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Executive Summary

The New York State Legislature, in Chapter 1022 of the Laws of 1981, established a small claims court assessment review process for residential taxpayers and created an additional measure of the level of assessment for use in this review process. The new measure, the Residential Assessment Ratio (RAR), is defined as the sum of the assessments for recently–sold residential parcels divided by the sum of the sales prices for the same parcels. Prior to enactment of Chapter 1022, the only statistical measure of the level of assessment available on a statewide basis was the Equalization Rate. The RAR differs from the Equalization Rate in three important ways:

1. It is based on a comparison of sales prices and assessments rather than on the comparison of assessed and appraised values reflected in the Equalization Rate.
2. It is based on residential sales only, whereas the Equalization Rate represents a variety of property types.
3. It is more current, because its sales data are no more than two years old, while the Equalization Rate is usually based on values which are at least five years old.

The data from which the RAR is computed originate from real property transfer reports, the filing of which is required by law in New York before a deed can be recorded. These reports are completed by one of the parties to the transaction or a representative. They contain price information, assessment data, details regarding parcel location, use, and many other aspects of the transaction which are important to establishment of the RAR (see Appendix for an example reporting form). Efforts are subsequently made by the state and cooperating local governments to correct any incorrect or incomplete data entered on the reporting forms. Following inclusion of all the available documented corrections, RAR values are annually computed for assessing units by the State Board of Equalization and Assessment (SBEA).

Experience with the RAR during the 1980's has shown that, in many places, it exhibits an alarming degree of change from year to year. Because much of this change can not be explained by such rational factors as changes in real estate values and/or updating of assessments, it calls into question the RAR statistic itself. Such unpredictable annual fluctuation discounts the RAR's worth as a measurement standard, especially for the homeowner whose assessment appeal is not supported by the RAR in one year, but would be in the next.

Local governments, whose assessments are challenged by homeowners using the RAR as proof of inequity, are also affected by the measure's tendency to change radically, both up

and down, from year to year. This report reviews the RAR statistic, explores the reasons for the observed volatility, and suggests changes which would make the RAR a more reliable indicator of the level of assessment.

Statistical analysis revealed that three major factors explain a significant amount of the variability in the RAR. These factors, all of which could be measured with available sales or assessment data, were: the number of sales available; the quality of assessment practices; and the quality of sales reporting.

Availability of Sales Data

The study examined the relationship between the number of sales in a municipality and the RAR's stability. During the time period covered by the 1983 through 1989 RAR's, 53 percent of cities and towns averaged less than 30 sales per year; 39 percent had less than 20; and 18 percent had less than 10. When the average number of available sales was reviewed as a percentage of total residential parcels, the issue of sales adequacy was further highlighted: in 98 percent of the municipalities, the average number of RAR sales available represented less than 5 percent of the total residential parcels.

The study confirmed through statistical analysis that municipalities with chronically very few sales were more likely to have an RAR which fluctuated relatively more from year–to–year. However, once sales numbered in the 25–50 range, no significant stability gains resulted from greater numbers. Thus, the state's smallest assessing units are the ones most likely to experience volatility attributable to this factor, and such volatility may be expected to be greater during periods of slack real estate markets.

Since the RAR procedure is specified in law, no administrative discretion is available through which establishment of an RAR might be deemed inappropriate if the amount of available sales data was determined to be inadequate. In fact, the Board of Equalization and Assessment is currently required to establish an RAR even if there was only one usable sale in a municipality. The data reviewed suggests that some minimum number of sales should be available to establish a reliable RAR, and at least 25 would be required to achieve maximum RAR stability.

Influence of Assessment Practices

The study also attempted to isolate the effect assessment practices had on the RAR. The extent of assessment uniformity may be measured by use of a statistic known as the coefficient

of dispersion (COD). The COD measures the average percentage deviation of the available assessment ratios from the median ratio. It may be computed from either sales or appraisal data, and current state standards require that the COD be 10 percent or less for residential property.

To examine the influence of assessment uniformity on the RAR, municipalities were divided into groups having relatively higher or lower average residential COD's over the period studied. As might be expected, those places with higher average COD's, indicating less uniform assessing practices, showed a marked tendency to have an RAR which fluctuated significantly on a annual basis. The level of uniformity was particularly important where sales were few, as a relatively small number of sales could still give a reliable indication of the average assessment ratio if assessments were relatively uniform. Thus, while the RAR may be subject to volatility, local governments can mitigate this tendency by maintaining their assessments at uniform levels.

Importance of Accuracy in Sales Data Reporting

Use of sales data to measure the average level of assessment requires accurate recording of the market transactions. It is possible to verify some data items manually or by computer through consistency checks and identification of missing data. In fact, between 40 and 50 percent of all residential sales records received by SBEA are typically excluded from the RAR calculation for one or more reasons. Not all data errors can be found in this way, however, since finding many of them would require detailed knowledge of the property in question. This highlights the need for local government officials to review the sales data used in the RAR and the need for a cooperative state–local effort to improve data quality.

Both the local assessor and, if authorized, the county director of real property tax services, are provided frequent opportunities to check and correct the sales data after the reporting forms have been received by SBEA and before the RAR is calculated. This study analyzed how this correction process and, by implication, the degree of data validity, affect the RAR. To carry out this analysis, municipalities were divided into groups having relatively greater or fewer numbers of corrections.

The number of municipalities availing themselves of the corrections process has been growing, but 45 percent of them filed no corrections to RAR sales of 1989. Nevertheless, over one–fifth of all municipalities corrected more than 50 percent of their 1989 RAR sales. More than anything else, this reflects the seriousness of the problem with poor–quality raw data.

After all, if a significant percentage of conscientious correction efforts result in changes to more than 50 percent of a municipality's usable sales records, how good is the data from the 30 percent of municipalities that submit no corrections at all?

Not surprisingly, statistical analysis of corrections data in relation to annual changes in the RAR revealed that places which utilized the correction process more than average tended to have a more stable, predictable RAR over time. Thus, even though the RAR statistic may be handicapped in instances where sales are few, assessors can help to make it a better indicator of the level of assessment by submitting corrections for data which they know to be either erroneous or incomplete.

Improving the RAR

In addition to the improvements already mentioned — better assessing and correction of sales data — the RAR could be further improved by calculating it as the median assessment ratio rather than the currently–used weighted mean. This change would prevent the distortions now experienced when extreme ratios resulting from undetected erroneous data bias the weighted mean. Since the RAR calculation is specified in law, such a change would require legislation. Although there is considerable evidence that the current RAR is not a reliable indicator of the level of residential assessment in perhaps half of the state's municipalities, use of the median, along with better assessing practices, improved sales reporting, and establishment of a minimum required number of sales, holds forth the possibility that it could assume such a role in the future.

Volatility In New York's Residential Assessment Ratios

Introduction

The New York State Legislature, in Chapter 1022 of the Laws of 1981, established a new procedure for homeowners to use when challenging their assessments. This procedure, known as small claims court assessment review, consists of an informal hearing before a hearing officer appointed by the county court. Such a hearing is available only to property owners who have first filed a grievance with the local Board of Assessment Review (BAR), and only when the property is an owner–occupied, one, two, or three family residence. Chapter 1022 also provided for a new measure of the level of residential assessment in a municipality — the Residential Assessment Ratio (RAR).

The RAR was adopted as a more current and more specific measure of the average assessment ratio for residential property than the Equalization Rate, the only measure available to residential taxpayers prior to 1981.[1] Calculated annually by the New York State Division of Equalization and Assessment (SDEA), the RAR is based on sales occurring during a given assessment roll year and the assessments for the parcels in question. Since the RAR was introduced, comparisons have often been made between it and the Equalization Rate — involving both the relative levels of these two statistics and the extent to which they change from year to year. In particular, the RAR has been criticized for unacceptably large annual fluctuations in a significant number of the state's assessing units.

The purpose of this paper is to examine the way the RAR is calculated and evaluate its annual volatility. Throughout the discussion, comparisons are made to the only other measure of average assessment ratio available on the statewide basis — the equalization rate.

How the RAR Differs from the Equalization Rate

The Residential Assessment Ratio, defined in section 738 of the Real Property Tax Law, is calculated by summing the sales prices and assessments for the properties involved in all eligible transactions and dividing the latter sum by the former (producing a weighted mean ratio). It is different from the Equalization Rate for an assessing jurisdiction in three important ways:

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[1] Since a landmark 1974 court case (Guth Realty Inc. v. Gingold, 344 N.Y.S. 2nd 270, 358 N.Y.S. 2nd 367), New York taxpayers challenging their assessments may use the equalization rate to prove assessment inequity.

1. **It is based on sales.** Whereas a municipality's RAR is calculated from sales of residences (arm's length transactions only) occurring in the year between two annual final assessment roll dates, the Equalization Rate is based on the ratio of assessments to appraised values of parcels sampled in market surveys. Appraised values reflect a specific valuation date, but the RAR sales are distributed over a twelve month period.

2. **It reflects residential property only.** Only residential sales are used in the calculation of the RAR, whereas other property types also enter into the establishment of an Equalization Rate.

3. **It is more current.** An RAR, at the time it is published, is based on sales which are generally less than two years old. The Equalization Rate is calculated from appraisal data collected in one or more market value surveys, and usually has an effective valuation date of at least five years prior to the time it first becomes available for use.[2]

Both the Equalization Rate and the Residential Assessment Ratio are "yardsticks" for measurement of the prevailing assessment level in a municipality. When these two measures are used to evaluate individual assessments, however, the results can be quite different. The Equalization Rate is usually higher than the Residential Assessment Ratio in a given year. Reasons for this include the rate's lag in valuation time, which may cause it to omit recent real estate appreciation, and the fact that it includes property classes other than residential. To the extent that the residential class is assessed at a lower effective ratio than other classes, the Equalization Rate will be higher than the RAR.

To understand the differences between the two measures more clearly, we must examine how each is calculated in more detail. For example, the 1987 Equalization Rates were calculated from 1987 roll assessments and from appraisals having a valuation date of July 1, 1983. The 1987 Rates were established and finalized in 1988. In contrast, the 1988 RAR's, also published in that year, were calculated from 1986 roll assessments and from sales occurring between the 1986 and 1987 final roll dates. These differences make comparisons complicated, and any attempt to equate the two measures in terms of time frame invariably forces a choice among at least three alternatives:

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[2] It should be noted that the State Division of Equalization and Assessment is developing a program to provide a more current Equalization Rate. When the program is completed the valuation date will be within three years of current market value.

1. **Make comparisons based on date of official establishment.** That is, when the measures became available to the public for use in gauging assessments. This alternative would attempt to equate the 1987 Equalization Rates with the 1988 RAR's because they were both established in 1988.

2. **Make comparisons based on the roll year of the assessments used.** This alternative would equate the 1987 Equalization Rates with the 1989 RAR.

3. **Make comparisons based on dates of valuation for both the appraisals and sales prices.** This alternative would attempt to equate the 1988 Equalization Rates (appraisal valuation date of July 1, 1983) with either the 1984 RAR (sales prices between 1982 and 1983 rolls) or the 1985 RAR (sales prices between the 1983 and 1984 rolls).

Tables 1 and 2 provide a statewide overview of the Equalization Rate and Residential Assessment Ratio during the time period covered by this study. The rates and ratios are identified according to the year in which they were established, i.e., the first type of comparison described above. In comparing the tables, it is evident that the Equalization Rates are indeed generally higher than the Residential Assessment Ratios. Also, a significant number of the Equalization Rates are in the 100 or more range, indicating recent revaluation or update activity, but the number of RAR's exceeding 100 is considerably lower. This difference again points out the effect of timing differences between the RAR and the Equalization Rate. While both measures are essentially representing ratios of assessment to value, for the Equalization Rate, values lag behind assessments, and in the RAR, assessments lag behind the values.

The different lags will cause the largest differences between the rate and the RAR when real estate appreciation is greatest. As evident in Table 1 and 2, the rate and the RAR increasingly diverged in the middle and late 1980's, during the strong real estate markets of that period. In the case of the RAR, values from sales will generally be less inflated relative to assessments since the lag is relatively short. Also, since the assessments are older than the sale prices, the ratio is less likely to exceed 100. An exception would be the case of sluggish or declining real estate markets, which would tend to raise the RAR, and an example of this phenomenon may be seen in the early 1980's when the percentage of RAR's in the 100+ category was somewhat higher (Table 1). The equalization rate, however, with the market value lagging the assessment by four or five years, will tend to produce more estimates over 100.

Table 1. Residential Assessment Ratios, 1982 to 1989

	1982	1983	1984	1985	1986	1987	1988	1989
Sales Year	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86	1986–87	1987–88
Statewide Mean	41.40	46.67	48.34	44.94	42.92	44.49	40.57	39.47
Statewide Median	23	28	31	31	28	33	31	30
RAR Level	**Percentage of Total Municipalities**							
Less than 10.00	21%	22%	21%	24%	30%	29%	31%	33%
Less than 25.00	53%	49%	47%	48%	48%	47%	47%	48%
Less than 50.00	65%	50%	58%	60%	61%	60%	59%	61%
Less than 100.00	92%	89%	89%	91%	95%	93%	97%	98%
100.00 or more	8%	11%	11%	9%	5%	7%	3%	2%

Table 2. Equalization Rates, 1981 to 1988

	1981	1982	1983	1984	1985	1986	1987	1988
Rate Valuation Date	7/1/78	7/1/78	3/1/79	11/1/79	7/1/80	1/1/82	7/1/83	10/1/84
Statewide Mean	46.26	50.77	52.08	52.29	52.00	54.51	55.27	53.13
Statewide Median	24	28	33	41	41	45	45	45
Eq. Rate Level	**Percentage of Total Municipalities**							
Less than 10.00	17%	17%	17%	17%	20%	21%	22%	25%
Less than 25.00	51%	49%	47%	49%	46%	44%	44%	43%
Less than 50.00	61%	56%	54%	54%	54%	53%	52%	52%
Less than 100.00	82%	77%	76%	76%	80%	79%	78%	82%
100.00 or more	18%	27%	24%	24%	20%	21%	22%	18%

Despite the conceptual and numerical differences between the Equalization Rate and the Residential Assessment Ratio, it is useful compare the volatility of the two measures over time. This is an important issue, since annual fluctuations have consequences for the ability of taxpayers to appeal assessments and the ability of local governments to plan their finances. Comparison indicates that the RAR appears to be significantly more subject to fluctuation from year to year than the Equalization Rate. One useful measure of volatility — the average year–to–year percentage change (absolute value) is shown in Table 3.

The comparisons in the table are based on the year of establishment of the measures, i.e., the first comparison alternative outlined above. In other words, the change between the 1984 RAR and the 1985 RAR (established in 1984 and 1985 respectively) could affect assessment appeal considerations and decisions much like the change between the 1983 and 1984 Equalization Rates (also established in 1984 and 1985 respectively). A property owner

who was questioning a 1985 roll assessment, for example, would look at the most recent versions of both measures as yardsticks, and in this case, these would be the 1985 RAR and the 1984 Equalization Rate.

Table 3. Absolute Average Annual Percentage Change in the Equalization Rate and the Residential Assessment Ratio*

Residential Assessment Ratios			Equalization Rates		
Sales Years	RAR Years	Average % Change	Valuation Dates	EQ Rate Years	Mean % Change
1982–84	1984–85	18.2%	3/1/79 –11/1/79	1983–84	3.4%
1983–85	1985–86	18.2%	11/1/79 – 7/1/80	1984–85	3.5%
1984–86	1986–87	18.0%	7/1/80 – 1/1/82	1985–86	6.7%
1985–87	1987–88	19.1%	1/1/82 – 7/1/83	1986–87	6.0%
1986–88	1988–89	16.0%	7/1/83 –10/1/84	1987–88	10.1%

* Municipalities having revaluations or assessment updates have been excluded.

Table 3 clearly shows greater annual change in the RAR. Since it is unrealistic to expect that the ratio will never change — as assessments are not likely to keep pace with the annual market changes — the question arises as to how much change can be considered the normal outcome of property value appreciation. In the typical situation where no revaluation or update of assessments has occurred, the passage of time should almost always cause both the RAR and Equalization Rate to decline if market values rise and assessments remain relatively static. Indeed, the Equalization Rate's change over time in such assessing units is typically a gentle, downward slope over a period characterized by rising real estate values. The RAR, in contrast, not only changes to a greater degree from year to year, but in many municipalities, goes up in one year and down in the next. In a significant number of municipalities, the RAR increased in certain years during the second half of the 1980's (increases due to revaluation activity have been excluded here). This is contrary to what one would expect to find in circumstances of rising real estate values and relatively stable assessments (see Table 4).

Table 4. Municipalities with an Increasing RAR, 1984 to 1989*

RAR Years	Number of Municipalities	Percent of Total Municipalities
1984–85	291	29.3%
1985–86	279	28.1%
1986–87	268	27.0%
1987–88	193	19.4%
1988–89	215	21.7%

* Municipalities having revaluations or assessment updates have been excluded.

Such unpredictable fluctuations can cause confusion among homeowners and local property tax officials and may contribute to an apparent erosion of confidence in the RAR as an accurate measure of residential level of assessment for use in protesting or defending assessments. The total extent of reliance on the RAR at the present time is impossible to determine, but a study of 1989 assessment roll small claims decisions showed that the RAR was cited by hearing officers as part of the decision rationale in only 13% of the cases, even though the RAR was created primarily for use in small claims hearings.[3] It can also be introduced in Board of Assessment Review petitions and tax certiorari cases, but no data are available which might shed light on the role it plays in these settings. In any event, excessive annual fluctuations serve to undermine the usefulness of the statistic for all the purposes mentioned, placing a burden on the taxpayer to defend its relevance in the face of challenges based on its volatility.

Table 5 gives some of the more dramatic examples of RAR fluctuation. In the municipalities listed in the table, the average year–to–year RAR change was more than 50 percent. Many places not shown also exhibited relatively large annual changes. Nearly 25% of all municipalities had a 1984 to 1989 average annual RAR percentage change greater than 20% and nearly 44% changed more than 15% annually. About 90% had an average change greater than 10%.

[3] Rachel T. Crosby and William J. Heidelmark, *Small Claims Assessment Review Results, 1988 and 1989 Assessment Rolls*, Albany, NY, State Board of Equalization and Assessment, September 1990.

Table 5. Municipalities with Average Annual RAR Percentage Change Exceeding 50 Percent, 1984 to 1989*

Town	County	RAR 1984	1985	1986	1987	1988	1989	Average Absolute Annual RAR Change
Grove	Allegany	55.14	70.88	86.47	28.34	77.72	50.52	65.4%
Ashland	Chemung	4.92	5.67	20.19	6.07	3.86	4.54	79.1%
Halcott	Greene	17.16	9.92	31.91	13.27	8.70	5.31	79.1%
Forestport	Oneida	5.45	3.44	13.29	4.89	10.25	3.71	112.0%
Palermo	Oswego	8.47	9.21	7.45	18.87	5.65	7.08	55.3%
Tuscarora	Steuben	24.00	10.11	32.67	5.93	6.60	7.93	78.9%
Forestburgh	Sullivan	294.28	23.31	22.73	19.39	10.61	20.90	50.3%

* Municipalities having revaluations or assessment updates have been excluded.

Large fluctuations in the RAR are likely to have real financial consequences for local taxing units and homeowners alike. When the RAR is high, few may appeal their assessments, and some homeowners may pay too much tax as a result (for example, a 20 percent reduction in the typical residential tax bill in New York would amount to $300 to $600 annually). On the other hand, a large decline in the RAR can cause a surge in appeals if a sufficient number of homeowners realize they have a good chance of lowering their assessments. In extreme cases, swings of this type could destabilize local government budgets.

The remainder of this report examines the reasons the RAR behaves the way it does. Three main factors — the number of sales, the extent of assessment uniformity, and the validity of sales data — are discussed in separate sections. It is recognized that, even though these factors are discussed separately, they are not always truly independent of one another. For example, assessment uniformity is likely to be related to the amount of effort the local government puts into the assessment function, which in turn may influence the quality of sales data via the mechanism established for correction by the assessor or the county director of real property tax services. Despite the potential overlap, separation of the three factors helps to clarify the several sources of RAR instability.

How the Number and the Types of Sales Affect the RAR

Section 333 of the Real Property Law requires that a Real Property Transfer Report (form EA–5217 — see Appendix) be filed with the county clerk before a deed can be recorded.[4] The form documents various details of a real property transaction and must be filled out by

[4] This requirement does not apply in New York City, which documents real property transfers through administration of its own real property transfer tax.

either the buyer or the seller or someone who was party to the sale (an attorney, for example). Information to be entered on the form includes sales price, current assessment, parcel description and location, names and addresses of the buyer and seller, and the type of transaction. The completed EA–5217 is sent to the local assessor, the county director of real property tax services and to the SDEA. Following an effort to locate and correct any erroneous or incomplete data, the usable arm's length transactions indicated as involving residential property become the basis for RAR calculations.

Table 6 shows how the numbers and distribution of usable sales changed during the time period covered by this study. The number of usable sales per municipality has been steadily increasing since 1983, largely as a result of the boom years in real estate which occurred during these years. Activity tended to taper off toward the end of the decade as the state's economy generally slowed, especially in the downstate area.

Table 6. Number of RAR–Eligible Sales in New York State

RAR Year:	1982	1983	1984	1985	1986	1987	1988	1989
Median Number in a Municipality	14	12	19	24	28	29	37	35
Number of Sales	**Percentage of All Municipalities**							
5 or less	22%	23%	14%	12%	10%	8%	5%	6%
10 or less	42%	45%	33%	26%	22%	19%	14%	14%
25 or less	69%	70%	59%	52%	47%	47%	38%	40%
50 or less	84%	84%	75%	70%	68%	66%	60%	63%
100 or less	92%	91%	86%	83%	81%	81%	77%	79%
101 or more	8%	9%	14%	17%	19%	19%	23%	21%

This general upward trend in the median number of available sales obscures the fact that, in a specific municipality, the number of sales can go up and down radically from year–to–year. While larger assessing units will always have more than enough sales, the smallest ones chronically have only a few sales. Still other assessing jurisdictions which are heavily reliant on a single large industrial facility or are seeing completion of a new subdivision can experience surges and contractions in annual sales activity. In addition to factors already mentioned — such as amount of market activity, municipal size (as measured by the number of residential parcels), and sales reporting accuracy — the number of usable sales also depends on the mix of arm's–length transactions and transactions where the price may not be a good indicator of the value of the parcel assessed. Because transfers failing the test for arm's length status must be excluded, the number of sales usable for calculating the RAR can be significantly lower than the total number available.

Even when only arm's length transactions are used and the data are reported accurately, the kinds of homes which sell in a given year can influence the RAR. For example, most of the sales in a suburban town which is in a development phase could, in a given year be located in newer subdivisions. Because the RAR is currently calculated as a weighted mean, the estimate for that year would be heavily influenced by the particular group of sales in question. Since these properties are more likely to have been recently assessed than the average home, they may have different assessment ratios from the overall average for the assessing unit and the RAR which results may thus be biased. In the next year, however, if sales are more widely distributed across all neighborhoods, the RAR could change significantly.

Statisticians typically rely on randomly drawn data samples in order to make predictions about entire populations in a cost–effective manner. Were it not for several shortcomings, the annual group of usable RAR sales could be viewed as such a sample, to be used in estimating the average level of assessment of all residences in a municipality. These include both a potential lack of randomness and a potential lack of sufficient sales. Lack of randomly–occurring usable sales is a chronic, major inadequacy and small samples (fewer than 30 observations) are likely to produce statistical fluctuations in the RAR which are due solely to the particular mix of transactions occurring in the years in question.

The RAR calculation is specified in law and no adjustments to offset the effects of inadequate or non–random data are permitted. If there is only one usable sale for a municipality, then the RAR consists of that single assessment–to–sales–price ratio. During the time period covered by the 1983 through 1989 RAR's, 53% of all cities and towns had a pool of sales averaging less than 30 and 18% had fewer than 10 sales. In the year when markets were weakest (1982) nearly two–thirds had 10 sales or less.

The present study confirmed the expectation that municipalities with consistently large numbers of sales were more likely to have an RAR which fluctuated less from year–to–year (Table 7). In general, an average annual change in the RAR of greater than 20% (after adjustments for revaluations and general assessment updates) is unlikely to be attributable to market activity. Places with an average of 25 or more annual RAR–eligible sales were much less likely to have an RAR which, on the average, changed more than 20% from year to year.

RAR stability gains from greater number of sales do not seem to continue indefinitely, however. Table 7 shows that, once the number of available sales reaches the 25–50 range, further gains in stability are unlikely. Also, the data indicate that 27 of the smallest assessing units (those with 5 or less usable sales annually) had above average RAR stability. This demonstrates that the problem of scant sales data is not always insurmountable — assessing units can apparently offset at least some of the potential volatility caused by lack of sales. Two

factors which were found to be important in preventing RAR volatility, and which could help compensate for scarcity of sales, are the quality of assessing and the quality of the sales data on which the RAR is based. Unlike the matter of sales data availability, the first of these factors is ultimately under the control of assessing units and the second can be strongly influenced by their activities.

Table 7. Extent of Annual RAR Fluctuation by Number of Sales, 1984 to 1989

Average Annual Sales	Number of Municipalities	Average Annual RAR Percentage Change				
		0% to 10%	11% to 20%	21% to 30%	31% to 50%	> 50%
1 to 5	63	43%	13%	18%	21%	6%
5 to 10	107	14%	36%	25%	22%	4%
10 to 25	280	23%	47%	21%	8%	1%
25 to 50	197	35%	51%	9%	5%	1%
50 to 100	155	34%	53%	10%	2%	1%
100 or more	178	34%	52%	11%	2%	1%

How the Degree of Assessment Uniformity Affects the RAR

Like any measure of central tendency, the RAR is blind to the extent of dispersion of assessment ratios around the center point. In fact, identical RAR's might be calculated for two assessing units, one of which had little dispersion among the ratios (uniformity) and the other of which had extreme dispersion (lack of uniformity). However, since the annual RAR is determined from relatively few of the properties in a given assessing unit, it obviously has greater potential for fluctuation where the level of uniformity is low. To understand the importance of assessment uniformity to the RAR, it is first necessary to review the method used to measure uniformity.

Several statistics are available which can be used as measures of municipal assessment uniformity, all with the underlying assumption that, while perfect uniformity is never attainable, the assessment ratios of properties in a jurisdiction should be within a reasonable range. The statistic most frequently used is the coefficient of dispersion (COD). The COD measures the average percentage that assessment ratios are dispersed around the median ratio. The smaller the spread of ratios, the more uniform and equitable the assessments are considered to be. Acceptable levels of dispersion are generally considered to be 10 percent for residential property and 15 percent for all property classes combined.

COD's can be calculated from sales data and from market survey appraisal data. Advantages of the latter approach include the stratified random selection process by which

samples are drawn, which insures representativeness across property types and value levels. Sales data, on the other hand, are not randomly occurring and often fail to include certain types of property. Other advantages of the survey approach include careful preparation and verification of data, and a single appraisal date for which all values are determined. In contrast, sales data reported by sellers of real property during a given year frequently contain errors, and the prices paid reflect market trends over the entire year.

The difference resulting from use of sales and appraisal data to measure assessment uniformity is dramatically illustrated when one compares the ranges of COD's calculable from RAR sales data with those calculated from market survey appraisal data. For example, the sales–based COD's from RAR years 1984 to 1989 had statewide means ranging from a low of 63.4 to a high of 96.2, indicating very poor assessment practices overall. In contrast, appraisal–based COD's from the 1980, 1983 and 1986 market surveys had statewide means of 22.1, 20.1 and 21.6 respectively, indicating much better assessment practices than the sales data would lead one to expect. Similarly, statewide municipal median COD's ranged from 39 to 42 — significantly higher than the three appraisal–based medians of 19, 18, and 20, respectively. Clearly, use of sales data dramatically lowers the level of measured uniformity, at least in comparison to appraisal–based data.

A related statistic used to measure the quality of assessment is the index of regressivity. This index shows the extent to which relatively lower or higher value properties are relatively overassessed or underassessed. An index of less than .95 indicates overassessment of higher valued properties (a bias toward progressivity), while a value greater than 1.1 indicates overassessment of lower valued properties (a bias toward regressivity). Indices between .95 and 1.1 mean that the assessment ratio is neutral with respect to property value. Here again, the ranges for this statistic, when calculated from sales data and appraisal data, are significantly different. For RAR years 1984 to 1989, the statewide municipal mean for the index of regressivity calculated from RAR sales ranged from a low of 1.29 to a high of 1.53, and the statewide municipal median value for the sales indices ranged from 1.15 to 1.19, all of which indicated regressive assessments. However, for the three market value surveys, 1980, 1983 and 1986, the statewide municipal means for the index as calculated from appraisal data were much lower (and in the neutral assessment range) at 1.05, 1.03 and 1.04; similarly, the medians were only 1.01 for all three surveys.

Despite the fact that one obtains two distinctly different images of New York's assessment practices depending on whether one is viewing the sales–based or survey–based uniformity measures, it is still possible to comment on how assessment practices affect the RAR. Table 8 shows the relationship between sales data COD's and average annual RAR

percentage change, and Table 9 presents the same type of information for appraisal–based COD's.

Table 8. Average Annual RAR Percentage Change by Average Annual Sales COD, 1984 to 1989

Average Annual Sales COD	Number of Municipalities	Average Annual RAR Percentage Change				
		0 to 10%	11 to 20%	21 to 30%	31 to 50%	> 50%
Less than 10	13	100%	—	—	—	—
10 to 19	19	84%	16%	—	—	—
20 to 29	94	60%	36%	2%	2%	—
30 to 39	157	39%	46%	12%	3%	—
40 to 49	158	23%	60%	11%	6%	1%
50 or more	551	22%	45%	20%	10%	3%

It is clear from the Table 8 that the higher the average sales COD, the more likely the RAR is to fluctuate significantly from year to year. Especially noteworthy is that 551 municipalities — more than half the total number — had average sales COD's greater than 50, in the range where annual volatility is greatest. Although the overall level of uniformity measured from appraisal data is higher, the same relationship exists between the size of the appraisal–based COD and the volatility of the RAR (Table 9).

Table 9. Average Annual RAR Percentage Change (1984–1989) by Average Survey ('80, '83, '86) COD

Average Annual Survey COD ('80, '83, '86)	Number of Municipalities	Average Annual RAR Percentage Change				
		0 to 10%	11 to 20%	21 to 30%	31 to 50%	> 50%
Less than 10	57	65%	33%	2%	—	—
10 to 19	413	37%	49%	9%	4%	1%
20 to 29	348	21%	49%	20%	9%	1%
30 to 39	126	19%	38%	24%	15%	4%
40 to 49	35	32%	29%	26%	9%	6%
50 or more	12	8%	25%	25%	33%	8%

Of particular note in Table 9 is the group of 57 municipalities with average appraisal–based COD's of less than ten (indicating the most uniform assessments). Among these assessing units, 98% had an RAR which fluctuated less than 20% annually. Similarly, 413 places had average appraisal–based COD's of between 10 and 20 (reasonable assessment uniformity) and 86% of these had RAR's which had annual average percentage change of less

than 20%. It is clear from these data that the RAR succeeds best as a reliable overall measure of the level of residential assessment where assessments are relatively uniform.

An inaccurate, volatile RAR tends to help disguise and even perpetuate the flaws in an assessment system which lacks uniformity. If homeowners are unable to find an objective standard against which to measure their assessments they may be discouraged from filing grievances or their appeals may be unsuccessful if hearing officers place less faith in the RAR because of instability. This reduces the pressure on municipalities to improve their assessments and serves to undermine the small claims review program.

How Sales Data Validity Affects the RAR

The use of sales in the measurement of current assessment practices relies on the accurate capture and transmission of market data. As mentioned previously, a deed will not be recorded by a county clerk unless a real property transfer report form (EA–5217) has been completed and filed by the buyer or the seller or an agent with personal knowledge of the sales transaction. These forms, copies of which are sent to SBEA and local assessment officials, provide the basic data for RAR calculations.

Calculation of a quality RAR depends critically on the quality of the data reported on the transfer report. Although the person completing the form can be held legally liable for its content, incomplete or inaccurate data is not unusual. For example, the form contains a section for describing the property at the time of the sale. Even though the person completing the form may have the best of intentions, it is still possible that the property will be classified incorrectly in this section, e.g., is a hobby farm residential or agricultural? Similarly, persons filling out the form often fail to indicate whether the sale was of a whole parcel or part of a parcel. The section of the form pertaining to the assessment on the property is often completed from reference to a tax bill, and there are sure to be cases in which the bill is several years out of date, pertains to a different parcel, or fails to reflect a subsequent parcel split or new construction.

Before the RAR is established, the sales data are put through a computerized data editing process, which eliminates sales for a variety of identifiable reasons such as: they are not arms–length transactions; they did not occur during the sales reporting period; or the sales price was less than $10. Other errors may slip through, however, because there is no way to check the validity of certain information by computer. In some instances, culling of bad data or otherwise unusable sales may result in only one or even no sale remaining for a given municipality. Since current law requires establishment of an RAR even if there is only one

usable sale, poor sales data and few transactions can reinforce each other in a specific case, causing large potential fluctuations in the RAR.

In any group of sales, it is not uncommon for one or two "outlier" assessment ratios to appear, and they skew the RAR to some extent. In many cases, such ratios result from errors of one type or another, such as the mis–reporting of an assessment or sales price. Figure 1 (based on actual data) dramatically illustrates the effect that outlier ratios can have. In this example, one extreme ratio (146.7) pulls the RAR to a much higher level than the main distribution of ratios. By contrast, the median assessment ratio in this case was 3.42, or about one–third of the mean–based RAR of 10.25. It is clear from Figure 1 that several of the properties in the data would have been considered overassessed had the median or other adjusted measure been used as the RAR instead of the currently–used weighted mean. While places with relatively large numbers of sales may generally be insulated from this outlier effect, it can be a real problem for the state's smallest assessing units. Most of all, it highlights the need for careful verification of the data to preclude bias due to data errors which are amplified by the weighted–mean calculation.

Because of the critical importance of correct data to the RAR, both assessors and authorized county real property tax directors are provided opportunities to check and correct sales data prior to use in final calculations. SDEA also compares data obtained from the real property transfer report forms with that received directly from the municipalities using state–compatible computer programs in order to detect discrepancies between the two sources. The present study examined the way this multi–phase correction process affects the RAR by dividing the total number of municipalities into groups having different levels of correction activity and calculating the average change in the RAR over time in each group.

Figure 1: Example Distribution of Assessment Ratios

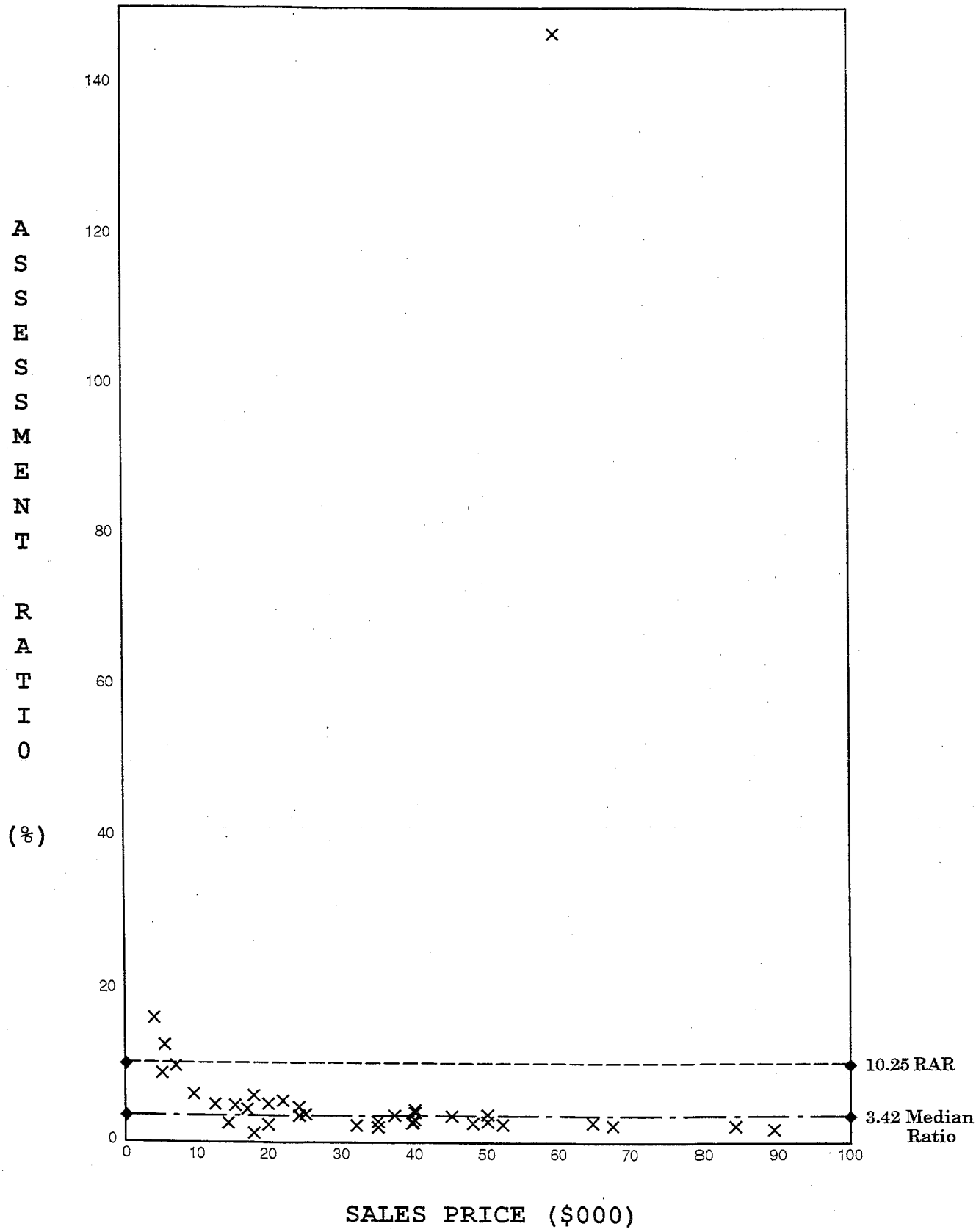

Table 10 displays how the number of corrections per municipality has changed over time. The number of municipalities availing themselves of the corrections process is obviously growing, though nearly half still make no corrections at all. Part of the general increase since the 1985 RAR can be accounted for by the fact that SDEA began in that year to allow county tax directors who have received assessor authorization to correct sales records, whereas only assessors had been allowed to make such corrections in prior years. Another factor is that SDEA has increased the frequency with which sales data are returned to assessors and directors for examination and possible correction. A third reason is simply the growth in the number of sales per municipality during the middle and late 1980's.

Table 10. Number of Sales Corrections Per Municipality Per RAR Year

	1983	1984	1985	1986	1987	1988	1989
Statewide Mean	6.5	11.0	14.6	22.7	26.0	35.4	35.7
Number of Corrections	**Percentage of Total Municipalities**						
None	61%	26%	55%	50%	45%	44%	45%
1–3	19%	35%	17%	13%	16%	16%	15%
4–6	5%	12%	6%	8%	7%	7%	5%
7–10	4%	7%	5%	6%	5%	5%	5%
11–30	7%	13%	9%	10%	13%	13%	14%
31 or more	4%	7%	8%	14%	15%	15%	16%

Another way of measuring correction activity without the exogenous influence of the strong real estate markets of the recent past is to calculate the ratio of the number of corrections to the number of sales used in making the RAR. Table 11 shows the distribution of these ratios from the 1983 RAR through the 1989 RAR. This table displays the same pattern as the previous one, namely a general increase in correction activity over time. The range in Table 11 which shows the most dramatic change is that for corrections/sales ratios of more than 50%. Over one–fifth of all municipalities made corrections to more than 51% of their sales records from the 1989 RAR year. This demonstrates both the poor quality of the raw data and the extensive work needed on the part of local government to make the RAR work as intended.

Despite the lack of correction data submissions from some municipalities, the high ratios of corrections to sales in others is sufficient confirmation that raw sales data can be rife with errors, some of which cannot be detected by computer editing. When the conscientious correction efforts of many municipalities result in changes to over 50% of the usable sales records, one can validly ask how good the data are for the 45 percent which submit no corrections to RAR sales.

Table11. Ratio of Number of Corrections to Number of Final RAR Sales, 1983 to 1989 (expressed as a percent)

	1983	1984	1985	1986	1987	1988	1989
Statewide Mean	11.0%	17.0%	10.4%	18.1%	21.4%	19.5%	22.9%
Ratio of Corrections/Sales	**Percentage of Total Municipalities**						
0%	64%	31%	61%	53%	51%	50%	49%
1–5%	4%	9%	8%	5%	6%	8%	8%
6–10%	4%	10%	5%	5%	6%	6%	5%
11–20%	9%	22%	8%	8%	7%	9%	6%
21–30%	6%	10%	5%	5%	5%	4%	4%
31–50%	8%	12%	8%	10%	7%	5%	8%
51% or more	5%	6%	5%	14%	19%	17%	21%

Comparisons between municipalities grouped according to their relative levels of correction activity produced an expected conclusion: places which utilized the correction process more than average tended to have a more stable, predictable RAR over time. Table 12 shows the relationship between corrections/sales ratios and the percentage change in the RAR. The data indicate that, as correction activity increases, the degree to which the RAR fluctuates from year to year generally decreases. While the evident relationship is not as clear or as definite as the one between assessing practices and RAR fluctuation (Tables 8–9), there can be little doubt that use of the correction process has a beneficial effect on the stability of the RAR. The data indicate that it is the initiation of data corrections by the assessing unit or the county which produces the real gains in RAR stability. For example, only 12 percent of the municipalities not correcting data had RAR's which fluctuated by less than 10 percent on average whereas approximately one third of those making corrections attained this level of RAR stability.

Table 12. Average Annual Corrections/Sales Ratio by Average Annual RAR Percentage Change, 1984 to 1989

Average Corrections/ Sales Ratio	Number of Municipalities	Average RAR Percentage Change				
		0 to 10%	11 to 20%	21 to 30%	31 to 50%	> 50%
0%	107	12%	45%	24%	16%	3%
1 to 10%	373	27%	48%	15%	8%	2%
11 to 30%	251	29%	52%	13%	4%	2%
31% or more	217	33%	45%	15%	7%	1%

Summary and Conclusions

For a measure intended to be used as the basis for determining the equity of challenged residential assessments, the RAR exhibits an alarming degree of annual fluctuation in a large percentage of the state's assessing units. In contrast to the Equalization Rate, the RAR was relatively unstable and unpredictable over the time period covered by this study. Because of the magnitude and direction of the fluctuations observed, it is unrealistic to think that the volatility in question results from the influence of market changes, assessment corrections, or any other such meaningful factors. The annual instability noted discounts the RAR's worth as an assessment standard, and the present report has attempted to discover and explain the reasons behind the RAR's fluctuation.

Probably no more than half of all New York's cities and towns had a consistently stable RAR over the time period covered by this study. Municipalities were more likely to have a reliable RAR if certain conditions were met. Of the three major factors discussed in the report, the maintenance of uniform, up–to–date assessments was most strongly related to the existence of a predictable, stable RAR. Such high quality assessments can also help to offset the potential dangers created by small numbers of sales. Even one sale can, if the assessments are relatively uniform, give an accurate representation of the municipality's average assessment ratio for property. Nevertheless, the data suggest that municipalities having fewer than 25 sales annually are likely to see unrealistic fluctuations in the RAR.

Besides non–uniformity of assessments and lack of sufficient sales in some municipalities, the other factor identified as critical to RAR stability is the data correction process. The raw data currently submitted through the sales reporting process require extensive editing and correction if reliable RAR's are to be calculated. Appropriate sales data review and correction activity requires effort on the part of the assessor, although county tax directors may assume some of this burden. The extent of review and revision required underlines the basic inadequacy of the sales reporting process; better reporting of sales is needed if the resulting data are to be used for purposes such as calculating the RAR or measuring assessment uniformity.

Another limitation of the RAR is that it provides only a partial picture of residential assessing practices in a municipality. In evaluating the merits of assessment appeals, decision makers need more information than that embodied in the RAR itself. One important piece of additional information would be the extent to which assessment ratios are non–uniform in the municipality, for this would give the hearing officer, judge, or other decision maker a better frame of reference in which to evaluate submissions by appellants and assessment officials. An effective way of providing such information would be the calculation of a COD from the same sales data used to establish the RAR, and provision of this COD to participants in the

assessment appeals process. However, since establishment of the RAR is governed by very specific statutory provisions, such as a change would undoubtedly require new legislation.

Legislative proposals currently exist which would change the calculation of the RAR from a weighted mean ratio to a median ratio. If such a proposal were adopted, the stability of the statistic will be immediately enhanced. The median approach will eliminate most of the current skewing effect caused by extreme, outlier ratios — often reflecting peculiar properties and/or data errors. The median ratio would thereby tend to offset the difficulties arising from low numbers of sales to some extent, but the median of a very small number of sales (say 5 or less) would still be suspect, however. Use of the median would also reduce the level of bias created by remaining data errors or, alternatively, make time consuming data corrections less important.

Over time, improved sales reporting may help to reduce some of the current RAR volatility. Establishment of a required minimum number of sales (at least 25 for maximum gains in stability) would also be helpful — even if this means establishing the RAR less frequently for at least those municipalities with few sales. Similarly, better assessing practices and use of a median–based calculation would help to compensate for scarcity of sales data, or remaining data errors. However, at the current time, the RAR has clearly not achieved the position of reliable, trustworthy measure of the level of residential assessment in many of the state's assessing units.

A FOR COUNTY USE ONLY

1. Swis Code
2. Date Deed Recorded
3. Book 4. Page

STATE OF NEW YORK
STATE BOARD OF EQUALIZATION AND ASSESSMENT
REAL PROPERTY TRANSFER REPORT

EA-5217 Rev. 1/90

CONTROL NUMBER 8730001

B IDENTIFICATION INFORMATION

City or Town | Village

1. Property Location — Street Number | Street Name | Zip Code
2. Buyer Name — Last Name | First Name
3. Buyer Address (after the sale) — Buyer Address
4. Buyer's Attorney — Name | ( ) Telephone Number
5. Seller Name — Last Name | First Name
6. Tax Billing Address — If the tax bill is to be sent to someone other than the buyer at his address, indicate: Name
   Street Name and Number | City or Town | State | Zip Code
7. Deed Property Size — Dimensions or Acres
8. School District Name

C ASSESSMENT INFORMATION (Data should be taken from the latest final assessment roll)

1. Enter the year of the assessment roll from which the information was taken.
2. Check the box indicating the number of assessment roll parcels which sold. ☐ One Parcel ☐ More Than One Parcel (Specify) ☐ Only Part of a Parcel
3. Enter the total assessed value (of all parcels in the sale).
4. Enter the tax map identifier of the parcel. (If more than one, list on a separate sheet) — Section | Block | Lot
5. Enter the roll identifier if different from tax map identifier.

D PROPERTY USE INFORMATION

1. Check the box in the Property Use Table which most accurately describes the use of the property at the time of sale.
2. Is the sale of a condominium or a cooperative? ☐ Yes ☐ No

PROPERTY USE TABLE

1	Agricultural			6	Community Service
2	1, 2, 3 Family Residential	4A	Commercial	7	Industrial
3A	Residential Vacant Land	4B	Apartment	8	Public Service
3B	Non-Residential Vacant Land	5	Entertainment/Amusement	9	Forest

E SALE INFORMATION

1. Date of Sale (Transfer)
2. **State the Full Sales Price.** $

(Full Sales Price is the total amount paid for the property, including personal property. This payment may be in the form of cash, other property or goods, or the assumption of mortgages or other obligations.)

3. Was there personal property in excess of $500 included in this sale? ☐ Yes ☐ No
4. If yes, indicate the value of the personal property included in the sale. $
5. Is this an arm's length sale? ☐ Yes ☐ No
6. Check all of the conditions below that apply to this sale.

- A ☐ Sale Between Relatives or Former Relatives
- B ☐ Sale Between Related Companies or Partners in Business
- C ☐ Land Contract Sale (Specify Contract Date)
- U ☐ Sale Contract Executed More than One Year Prior to the Date of Sale
- F ☐ Buyer or Seller is a Government Agency or a Lending Institution
- R ☐ Deed Type is Not Warranty or Bargain and Sale (Specify Deed Type)
- T ☐ Sale of Fractional or Less than Fee Interest (Specify)
- G ☐ Other unusual factors affecting sale price (Specify)

F CERTIFICATION

I certify that all the items of information entered on this transfer form are true and correct (to the best of my knowledge and belief) and I understand that the making of any willful false statement of material fact herein will subject me to the provisions of the penal law relative to the making and filing of false instruments.

Signature | Street Name & Number

Name (Print or Type) | City / Town

( ) Telephone | Date | State | Zip Code

COUNTY DIRECTOR COPY

Swis Code

CHECK ALL THAT APPLY

- ☐ Significant change in the property between taxable status date and sale date
- ☐ Property in more than one Swis Code Other Swis Code
- ☐ Tax Map identifier incorrect Enter formatted tax map identifier: Section | Block | Lot

For Local Use Only
Optional Correction Form for Transmittal by County Director to SBEA

CONTROL NUMBER 8730001

CORRECTION CODE	*SOURCE CODE	CORRECTION

*Source Codes for corrections
A - Deed
B - Assessment Records
C - Party to the transfer

COUNTY DIRECTOR COPY

FOR FURTHER INFORMATION ON CORRECTIONS CONSULT YOUR EA-5217 HANDBOOK.

ASSESSOR AUTHORIZATION REQUIRED FOR COUNTY DIRECTOR CORRECTIONS TRANSMITTED TO SBEA.

CORRECTIONS TO SECTION E REQUIRE DOCUMENTATION.