

A STUDY OF PROPERTY TAX ASSESSMENT,
IN STILLWATER, OKLAHOMA

By

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INTRODUCTION 12

Purpose 7

The objective of this study is to find out the degree of real property assessment uniformity in Stillwater, Oklahoma. This objective is carried out by the development of basic data on property assessed values and market values, and by the arrangement of these data in order to statistically measure property assessment uniformity in Stillwater. Four major hypotheses concerning the property tax are tested in this study. Also, the findings of this study may be compared to an earlier study on the assessment of property in Stillwater to see what change in assessment uniformity has occurred.¹

The subsequent section will briefly state the hypotheses to be tested in this study. This statement will be followed by a discussion on the methodology, limitations, and a plan of presentation for the remainder of the thesis.

¹ *Damai Satidhangvoot*
Robert W. Pittman, "A Case Study of Property Assessment for Taxation Purposes in Stillwater, Oklahoma" (unpublished Master's thesis, Oklahoma State University, 1957).

Hypotheses

There are four major hypotheses concerning property tax assessment which are tested in this study: (1) residential property is assessed more uniformly than business property; (2) unimproved property is assessed at a lower percentage of market value than is improved property; (3) improved property of low market value is assessed at a higher percentage of market value than is improved property of high market value; and (4) new improvements are assessed at a greater percentage of market value than are older improvements.²

Methodology

The basic data used to test the hypotheses are gathered by the sales ratio method and the effective rate of taxation method. The sales ratio method is the computation of individual sales ratio percentages, i.e., the ratio of the gross assessed valuation of an individual piece of property to the market value of that property. The effective rate of taxation method involves the computation of individual effective rates, i.e., the ratio of taxes to market value. The data secured by both methods are then subjected to statistical measures. The remainder of this section will discuss the methodology of the sales ratio method, effective rate of taxation method, and the statistical measures used.

²These same hypotheses were examined by Robert W. Pittman in "A Case Study of Property Assessment for Taxation Purposes in Stillwater Oklahoma." Also, see "A Study of the Property Tax in Pottawatomie County Oklahoma," (Business Extension Service, Oklahoma State University, 1961), by Ansel M. Sharp and Duck Nam for a formal presentation and testing of these hypotheses.

Sales Ratio Method

The procedure for the sales ratio method must be laid out in advance to facilitate the collection of data in a precise and orderly manner. Thus, the procedure for a sales ratio study should provide a guide to these things: selection of the study population, selection of the study year, selection of the property sample, means of computing market value, and processing the data.

Selection of the Study Population

The selection of Stillwater, Oklahoma as the study population was influenced by two factors: first, the information was readily available, and second, a Stillwater study permitted the comparison of findings between 1956 and 1962 as noted earlier.

Selection of the Study Year

The reason for selecting 1962 as the study year was that the assessment and deed records were complete, whereas the 1963 records were still incomplete and subject to revision of the Oklahoma State Board of Equalization.

Specified dates in the study year are set as criteria for the selection of sales. The beginning date for the drawing of the sample is January 1, which is the date of real property assessment in Oklahoma.

³ See Page 1 for this statement.

⁴ Oklahoma Statutes Annotated, Title 68, Section 15.44.

⁵ Ibid., Section 15.8.

Thus, the study extends from January 1, 1962 to December 31, 1962, allowing for an exception, as discussed in the Limitations section of this chapter.

Selection of the Property Sample

The two ways of selecting the property sample are by the use of simple random sampling and by the use of a restricted sample from usable sales. The first method involves the drawing of a simple random sample from the county assessor's property roll. The main advantage of this procedure is that a better sample can be constructed representing all property in its proper proportions to the total amount on the property roll. The biggest disadvantage is the prohibitive costs of hiring professional appraisers to appraise the market value of each property. The second method involves the selection of a restricted sample of usable sales from the official deeds in the county clerk's office. The advantage of this method is that the costs are not prohibitive. The main disadvantage is that certain classes of property may be left out or inadequately represented. But, because of the cost involved in hiring professional appraisers, the author decided to use the restricted sample method in the present study.

The selection of a restricted sample called for certain preparations and procedures which had to be laid out beforehand. First, it was necessary to prepare an acceptable form to record the needed information. The sales data form had spaces for the following information: grantor-

⁶ See Page 57 in Appendix B for a copy of the sales data form.

grantee, type of deed, date of transfer and filing, outstanding encumbrances or liens, legal description, assessed valuation of land and improvements, and the amount of any homestead exemption.⁶ The required information came from two sources; the deed and the property tax roll. After preparation of the sales data form, but before selection of samples, a criterion had to be established for the selection of sales in the study. Thus, the following criterion was used to determine a bona fide sale:

The sale has been made on a free market in which the seller was perfectly free to choose between, or to reject completely, the bids by several buyers, and the buyer has the alternative of considering offers of other sellers of similar property.⁷

Even with this criterion it is difficult in many cases to actually determine whether a sale is bona fide or not. Certain property transfers can be eliminated as not being usable sales such as those involving duress--condemnation proceedings, eminent domain transfers, sheriff deed--, transfers between related parties, transfers between eleemosynary institutions, transfers bearing no revenue stamps, and transfers with less than 2.20 dollars in revenue stamps.⁸

Computation of Market Value

Market value is defined as that amount which could be received for property in a bona fide sale. The determination of the market value is

⁷Guide for Assessment-Sales Ratio Studies, Committee on Sales Data of National Association of Tax Administrators (Chicago, June, 1954), p. 6.

⁸Ibid., pp. 6-8.

computed from the federal revenue stamps appearing on the deed. These stamps are affixed to deeds in the amount of ^{.50} fifty-five cents for each 500 dollars of paid consideration. However, since the last fifty-five cent stamp covers a range of 500 dollars such as one dollar, 250 dollars, or 499 dollars, "...it is assumed for purposes of estimation that the consideration is half-way between the minimum and maximum to which a given amount of stamps may apply."⁹⁰ For example, with ⁹9.90 dollars worth of revenue stamps, this could apply to a range of values from 8,501 dollars to 9,000 dollars. Thus, following the rule regarding estimation, the property's market value would be estimated at 8,750 dollars with a maximum possible error of 250 dollars from either extreme.

Moreover, in using revenue stamps, no deeds with less than ¹⁵2.20 dollars in revenue stamps were used for the reason that the possible discrepancy would be too large. For example, it was stated that there is a possible error either way of 250 dollars when the midpoint of the last 500 dollars is used. Therefore, a sale bearing stamps of ^{1.10} 1.10 dollars would indicate an estimated market value of 750 dollars or a maximum possible error of 25 percent (250 dollars divided by 1,000 dollars), whereas a property transfer of 9,000 dollars estimated at 8,750 dollars would involve a maximum possible error of about three percent.¹⁰

^{10770 7/12/15}
^{3 22 x 500 = 1100}
¹⁰ Ibid., p. 12.

¹⁰ Ibid. (changing from 2000 to 1000 in calculation)

Processing the Data

After the selection of the property sample and the determination of market value, the last information from the county records was secured. The total assessed value, as obtained from the county assessors record, with a breakdown for land and improvements was entered on the sales data form. Homestead exemptions were deducted from the gross assessed value on residential property.

Finally, the property was classified as to use and age of improvements. This was done by visual inspection of the property. While inspecting each property, the author checked the appropriate property classification as being residential, business, or unimproved property. The age of the improvements was determined by asking each occupant about the age. The answers regarding the age of improvements were of three types: a concise answer, an approximation, and in some cases, no knowledge about the age of improvements. Where an approximation was given, the possible error was compensated for by progressively increasing the age groupings. (For example, each property transfer was placed in either of three groups; 1900-1944, 1944-1958, or 1958-1962. The larger groupings for older property provided leeway for approximations regarding the age of improvements.)

The next step was the calculation of individual assessment ratios and the grouping of those ratios. Each sales ratio was found by dividing the gross assessed value of each property by the market value. The market value is that amount computed from the revenue stamps plus any mortgage accepted by the buyer. The mortgage is added because revenue stamps apply to cash transferred, and the balance of an assumed

mortgage must be included to get a true picture of market value. Also, ~~balances of street and sewer assessments represent value added to the property and must be added to derive market value.~~ Then all the samples and their sales ratios were arranged in the following groups: all property, residential property, business property, unimproved property, property by age, and property by market value.

Before computing the statistical results of the above procedure, investigation of unusually low or high assessment ratios was made. For example, in one case of a high sales ratio, it was found that a mortgage had been assumed but had not appeared on the deed. Consequently, the individual sales ratio with the added mortgage was recomputed. The only low assessment ratios were those of unimproved lots which is characteristic of such property.

Effective Rate of Taxation Method

The net effective rate is the actual taxes paid divided by the market value, while the gross effective rate is the taxes computed from the gross assessed valuation divided by the market value. The need for the two rates is caused by the presence of the homestead exemption. Thus, the existence of the exemption for some residential property, but not for others, makes it necessary to compute the net effective rate for purposes of comparison. Therefore, the net effective rate permits an analysis with the homestead exemption, while the gross effective rate permits an analysis without the effect of the homestead exemption.

The computation of both rates required this information: actual taxes, gross taxes, and the market value. The actual taxes were taken

from the county treasurer's office, while the gross taxes were computed by multiplying the 1962 millage levy by the gross assessed valuation of each property sample.¹¹

Statistical Measures

Measures of central tendency and dispersion are needed to statistically measure the data derived from the sales ratio method and the effective rate of taxation method. The measures of central tendency used in this study are the arithmetic mean and the median. A measurement of dispersion is essential in determining the degree of assessment uniformity that exists between and within classes of real property. The specific measures of dispersion to be used in determining the degree of assessment uniformity are the quartiles, inter quartile range, semi-inter quartile range, average deviation, standard deviation, and the coefficient of dispersion.¹²

The variation within a frequency distribution of an array is measured by the use of the average and standard deviations. The average deviation is the sum of the absolute deviations from the arithmetic mean divided by the number of items. The standard deviation differs in that the deviations from the mean are squared, summed, divided by the number of items, and then, the square root is extracted.

¹¹The total millage levy in Stillwater for 1962 consisted of:

County Levy	14.68
City Levy	9.00
School District 1-16	42.00
	<u>65.68</u>

¹²See Appendix B for the statistical formulas used in this study.

The coefficient of dispersion provides measurement of the relative variation of the data in a statistical array. The coefficient of dispersion is computed by dividing the average deviation or the standard deviation by the arithmetic mean and multiplying by one hundred.

Limitations

The main limitation of this study involves the method of sample selection. As noted in an earlier section, the expense of hiring professional appraisers dictated the method of selecting usable sales only with the result that certain classes of property may be inadequately represented. As a consequence, in the present study, the problem of insufficient business transfers was encountered. For example, only three usable business transfers were found for 1962. Part of the difference was corrected by going through the deeds for 1961, which turned up two more usable sales, bringing the total business sample to five. This procedure should not affect the findings to any great degree, since the assessed value of these business properties did not change from 1961 to 1962. Even though the sample was increased to five, it is doubtful if any definite conclusions can be drawn about the assessment of business property in Stillwater.

Another difference was in sample selection and sample composition between the 1956 and 1962 studies. The 1956 study selected sales bearing less than 2.20 dollars in federal revenue stamps, thereby not meeting the same criterion of the present study. The selection of sales under 2.20 dollars will probably increase the possible error as noted in a

previous section.¹³ The differences in sample composition were caused primarily by residential and unimproved property. Table I illustrates the differences in sample composition between the two studies.

TABLE I

COMPOSITION OF PROPERTY SAMPLE: A COMPARISON BETWEEN 1956 AND 1962

Classification	1956 ^a	Percent	1962 ^b	Percent
Total	90	100	84	100
Residential	48	53	68	81
Business	7	8	5	6
Unimproved	35	39	11	13

^aSource: Robert W. Pittman, "A Case Study of Property Assessment for Taxation Purposes in Stillwater, Oklahoma" (unpublished Master's thesis, Oklahoma State University, 1957), pp. 66-73.

^bSource: Appendix A, Tables IV, V, and VI.

The unimproved property accounts for 39 percent of the total sample in 1956 as compared to 13 percent in 1962, while residential property amounts to 81 percent in 1962 as compared to 53 percent in 1956.

Plan of Presentation

Chapter II analyzes the findings of the sales ratio method in regard to the various types of real property. The findings also test the hypotheses presented earlier. The findings based on the effective rate

¹³See Page 6 for the discussion on this point.

of taxation method are discussed in Chapter III. Chapter IV is reserved for the conclusions and summary.

Appendix A presents a complete tabulation of findings of the study while Appendix B contains the statistical formulas used. Appendix C presents the legal description of every property transfer used in this thesis.

CHAPTER II 10

FINDINGS OF THE SALES RATIO METHOD 39

It is the purpose of this chapter to discuss the findings of the sales ratio study in relation to the various types of real property, i.e., residential, business, and unimproved property. The findings will also be used to test the hypotheses presented in Chapter I. Subsequent paragraphs will discuss the sales ratio method and its usefulness.

The gross assessed valuation of an individual piece of property divided by the market value of that property results in the sales ratio. The objective is to gather a group of individual sales ratios in order to examine the assessed valuation and to reveal any assessment inequities within and between residential, business, and unimproved property.

The popularity of the sales ratio method is attested to by the fact that ⁱⁿ ~~in 1956~~, ^{thirty} twenty states were conducting annual state-wide sales ratio studies.¹ From these studies several benefits flow to the states and localities. First, ⁱⁿ on the state level, the sales ratio findings aid the ^{national} state tax authorities in equalizing assessment ratios between and among the several ^{provinces & states} counties. This is especially important

¹ John A. Gronouski, "State Supervision of Property Tax Administration," National Tax Journal, X (1957), p. 160.

in those states where a property tax is collected from all the counties
 and returned in the form of grants-in-aid. This helps in preventing
 competitive under-valuation abuses by individual counties. Second,
 on a local level, the benefits of the sales ratio method accrue to the
 county-assessor as a guide to the degree of assessment uniformity within
 his taxing jurisdiction. Moreover, in future assessments, the sales
 ratios enable the assessor to make more equitable decisions as to the
 market value of real property. Third, and last, the findings of the
 sales ratio method provide the individual property owner information
 about his assessed value as compared to the assessed value of compar-
 able property.

Findings

The general findings are discussed within these groups: all prop-
 erty, residential property, business property, and unimproved prop-
 erty. Also, the findings of the 1956 study are compared with the
 findings of each group to ascertain changes in the level of assess-
 ment and the uniformity of assessment.² The hypotheses presented in
 Chapter I are tested within these groups: residential versus business
 property, unimproved versus improved property, market value of improved
 property, and age of improvements.

²Harold M. Groves, Financing Government (New York, 1954), p. 74.

³The complete findings of the sales ratio method for 1956 and 1962 are presented in Appendix A, Table I.

All Property

The findings for all property are analyzed in regard to the level of assessment and the uniformity of assessment. The level of assessment is determined by the use of the arithmetic mean and the median. The degree of assessment uniformity is determined by the inter quartile range and by the coefficient of dispersion, which is computed from the average deviation.

The findings of the current study indicate a mean assessment ratio of ^{17.68} 16.68 percent for all property in Stillwater. The mean ratio gives each property sample equal weight regardless of the sales ratio size for that property. Since 1956, ^{17.31} the mean assessment ratio for all property has declined from 16.88 percent to the present figure of ^{17.68} 16.68 percent, which is an insignificant decrease in the level of assessment.

The median, by avoiding the extreme low or high sales ratios, indicates an assessment ratio of ^{19.90} 18.90 percent. This figure indicates that 50 percent of the property sample is assessed above ^{19.90} 18.90 percent and 50 percent is assessed below the median. The median ratio for 1962 is an increase of three percentage points over the ^{15.90} 1956 median assessment ratio of 15.90 percent. Consequently, the median for 1962 shows an increase from ^{15.90} 1956 in the level of assessment for all property in ^{15.90} Stillwater.

The inter quartile range in 1962 was ^{10.27} 9.27 percent as compared to ^{15.50} 14.50 percent in 1956. This decrease in the inter quartile range shows that the middle 50 percent of the sales ratios fell within a smaller range for 1962. The decrease in the inter quartile range reflects greater uniformity of assessment for all property.

Also, the increase in assessment uniformity is reflected by a decrease in the coefficient of dispersion since 1956. The coefficient of dispersion measures the relative variation of deviations from the average assessment ratio. This was ~~21.82~~^{27.82} percent in 1962 as compared to ~~29.62~~^{30.62} percent in 1956. The decrease in the coefficient of dispersion for 1962 is an increase in the degree of assessment uniformity for Stillwater.

Residential Property

Residential property exhibits the highest level of assessment for any class of property in Stillwater. The average assessment ratio in 1962 was ~~19.03~~^{20.03} percent and is considerably above the average ratios of ~~13.84~~^{14.84} percent and ~~3.44~~^{4.44} percent for business and unimproved property respectively. The median ratio of ~~19.57~~^{20.57} percent also reflects the higher assessment for residential property. But, in comparison with 1956, the average level of assessment for residential property has declined from ~~21.35~~^{22.35} percent in 1956 to ~~19.03~~^{20.03} percent.

The fall in the over-all level of assessment for residential property was compensated for by an improvement in the uniformity of assessment. For example, the inter quartile range decreased from ~~10.68~~^{11.68} percent in 1956 to ~~7.06~~^{8.06} percent in 1962. Also, the coefficient of dispersion, which measures the relative variation of the deviations, dropped from ~~24.78~~^{25.78} percent in 1956 to ~~20.44~~^{21.44} percent in 1962. Both the inter quartile range and the coefficient of dispersion show greater uniformity of assessment for residential property.

Business Property

As noted earlier, the small amount of business transfers prohibits the drawing of definite conclusions about the level of assessment and about the degree of assessment uniformity.³ But, some basic trends can be pointed out in regard to the assessment of business property.

The present study indicates that business property is assessed at an average assessment ratio of ~~13.84~~^{14.89} percent, which is below the mean ratio of ~~19.78~~^{20.78} percent for 1956 and is a decrease in the level of assessment for business property.

Remembering that small coefficients of dispersion reflect greater assessment uniformity and large coefficients less uniformity; the present study's coefficient increased from ~~38.93~~^{39.93} percent in 1956 to ~~40.39~~^{41.39} percent in 1962. The figures indicate that business property is assessed less uniformly in 1962 than in 1956. Again, these figures must be interpreted with caution since some of the differences might be the result of insufficient business transfers.

Unimproved Property

The average assessment ratio of unimproved property, i.e., ~~vacant~~^{vacant} lots, is ~~3.44~~^{4.44} percent in Stillwater, which is very low when compared to the level of assessment for improved property (residential and business). Also, the average assessment ratio for 1962 is much smaller than the average ratio of ~~10.16~~^{11.16} percent for 1956. One of the most plausible explanations for the decrease in the level of assessment

³The reader should see the section discussing the study Limitations in Chapter I.

is that since 1956 speculation and increased demand for lots has increased land prices, while the assessed value has lagged behind the increases in market value. For example, Table II compares the sales prices of ten vacant lots of equal assessed value between 1956 and 1962.

TABLE II
SELECTION OF UNIMPROVED PROPERTY WITH EQUAL ASSESSED VALUES
FOR 1956 AND 1962

Sales Form Number ^c	1956 ^a		Sales Form Number	1962 ^b	
	Sales Price	Assessed Value		Sales Price	Assessed Value
35	2,250	100	95	5,614	100
411	2,250	100	19	4,750	100
59	1,750	100	90	4,750	100
153	1,250	100	99	4,750	100
1717	1,250	100	88	3,750	100

^aSource: Robert W. Pittman, "A Case Study of Property Assessment for Taxation Purposes in Stillwater, Oklahoma," (unpublished Master's thesis, Oklahoma State University, 1957), p. 73.

^bSource: Appendix A, Table VI.

^cThe 1956 study has no sale form numbers for unimproved property. The numbers in this column represent the position of the sale in the table as cited by the first source reference.

Thus, since 1956, the sale prices have more than doubled for unimproved property with the same assessed value. Sales prices of vacant lots have gone up, while the assessed values have lagged behind.

However, in comparison with 1956, the degree of assessment uniformity for vacant lots has increased. The coefficient of dispersion, which measures the percentage variation from the mean ratio, decreased from ~~40.86~~ 39.86 percent in 1956 to ~~36.75~~ 35.75 percent in 1962. This means that there is less variation from the average assessment ratio for 1962. The decrease in the level of assessment for unimproved property is compensated somewhat by an increase in the degree of assessment uniformity.

Residential Versus Business Property

The hypothesis is that residential property is assessed more uniformly than business property. This hypothesis will be tested by using the findings of the inter quartile range and the findings of the coefficient of dispersion presented in Table III.

TABLE III 9

INTER QUARTILE RANGE AND COEFFICIENT OF DISPERSION FOR
BUSINESS AND RESIDENTIAL PROPERTY

Classification	Inter Quartile Range		Coefficient of Dispersion	
	1956	1962	1956	1962
Residential	11.68	7.06	25.78	21.44
Business	17.10	10.24	39.93	40.39

Source: Appendix A, Table I.

The findings presented are for both 1956 and 1962, but the hypothesis will be tested only by the current findings. This does allow a comparison of the present findings against the 1956 findings to ascertain any changes.

The inter quartile range, which represents the middle 50 percent of a statistical array, is ^{9.06} ~~7.06~~ percent and ^{10.24} ~~9.24~~ percent for residential and business property respectively. The smaller the inter quartile range, the greater is the degree of assessment uniformity. This means that 50 percent of the sales ratios for residential property is compressed into a smaller range, and, therefore, is assessed more uniformly than business property.

Also, the coefficient of dispersion for residential property is ^{21.64} ~~20.44~~ percent. This is considerably below the coefficient of ^{41.39} ~~40.39~~ percent for business property. Consequently, the relative variation from the mean ratio is less for residential property than for business property; but, some of the difference may be attributable to the insufficient business transfers encountered in this study. The findings as represented by the inter quartile range and the coefficient of dispersion supports the hypothesis that residential property is assessed more uniformly than business property in ^{Samuel} Stillwater.

Unimproved Versus Improved Property

The hypothesis to be tested is that unimproved property (vacant lots) is assessed at a lower percentage of market value than is improved property (residential and business property). The findings regarding the level of assessment for unimproved and improved property are presented in Table IV.

The average assessment ratio for residential and business property is ^{20.02} ~~19.03~~ percent and ^{14.84} ~~13.84~~ percent respectively, while unimproved lots were assessed at the low average of ^{4.44} ~~3.44~~ percent. This illustrates the

disparity of assessment between improved property and unimproved property. The findings support the hypothesis that unimproved property is assessed at a lower percentage of market value than is improved property.

TABLE IV

THE MEAN AND MEDIAN ASSESSMENT RATIOS FOR RESIDENTIAL,
BUSINESS, AND UNIMPROVED PROPERTY

Classification	Mean		Median	
	1956	1962	1956	1962
Residential	21.35	19.03	21.95	19.57
Business	19.78	13.84	19.00	13.08
Unimproved	10.16	3.44	8.00	3.08

Source: Appendix A, Table I.

Market Value of Improved Property

Market value is used to test the proposition that improved property (residential and business) of low market value is assessed at a higher percentage of market value than is improved property of a high market value. The findings of the arithmetic mean and median regarding market value of improved property are presented in Table V. The arithmetic mean for 1962 is the only statistical measure used to test the above proposition.

The sample findings show for 1962 that improved property in the 0 - 10,000 dollar bracket is assessed at an average ratio of 20.93 percent while the 10,000 - 20,000 dollar and the over 20,000 dollar brackets are assessed at average ratios of 19.26 percent and 13.94 percent respectively. The more expensive property is assessed at a smaller percentage

of its market value, and less expensive property is assessed at a greater percentage of its market value. Also, based on the sales ratio findings and the 1962 tax levy, the tax bill for an average 10,000 dollar house would amount to about 137 dollars while the tax bill for an average 20,000 dollar house would be 253 dollars. The taxes for the more expensive house are not twice as much as for the cheaper house, which illustrates the tax break that owners of more expensive property receive. As a consequence, the findings support the hypothesis that improved property of low market value is assessed at a higher percentage of market value than is improved property of a higher market value.

TABLE V 7

THE MEAN AND MEDIAN ASSESSMENT RATIOS FOR MARKET VALUE
OF IMPROVED PROPERTY

Market Value (Dollars)	Mean		Median	
	1956	1962	1956	1962
0 - 10,000	22.85	20.93	23.30	22.08
10,000 - 20,000	21.32	19.26	23.90	19.89
Over 20,000	15.70	13.94	19.00	13.27

Source: Appendix A, Table I.

Age of Improvements

The hypothesis to be tested is that new improvements are assessed at a greater percentage of market value than are older improvements. This means that new property is assessed closer to market value, and, therefore, bears a heavier tax burden as compared to older property.

The findings regarding the age of improvements as expressed by the arithmetic mean are summarized in Table VI.

TABLE VI
THE MEAN RATIOS FOR AGE OF IMPROVEMENTS

Date of Improvements (Years)	Mean
1958 - 1962	19.86
1944 - 1958	20.77
1900 - 1944	16.42

Source: Appendix A, Table I.

The figures show that property built between 1944 and 1958 had the highest average assessment ratio of 20.77 percent, followed by 19.86 percent for property built between 1958 and 1962, and 16.42 percent for the oldest improvements. Except for the slight decrease for improvements made from 1958 to 1962, the average assessment ratios of the relatively new improvements (1944-1962) support the hypothesis that new improvements are assessed at a greater percentage of market value than are older improvements (1900-1944). But the number of transfers may be inadequate in drawing definite conclusions as to the relationship of age and assessment.

Summary

The findings of the sales ratio method show that real property in ~~Stillwater~~ ^{Jamez} is assessed, on the average, at a slightly lower ratio than in the past, and that property is assessed somewhat more uniformly. For example, the average assessment ratios for residential, business, and unimproved property declined from 1956⁷¹ levels. The drop in the level of assessment was compensated for by improvement in the uniformity of assessment for some classes of property. The coefficients of dispersion for residential and unimproved property declined from 1956⁷¹, while the coefficient of dispersion for business property slightly increased. This means that residential and unimproved property is being assessed more equitably in 1962⁷³ while business property is being assessed less equitably.

Four hypotheses were tested by the sales ratio method findings. The findings indicated that residential property is more uniformly assessed than business property. The findings also supported the contention that unimproved property is assessed at a lower percentage of market value than is improved property. Also, the hypothesis stating that improved property of low market value is assessed at a higher percentage of market value than is improved property of a high market value was successfully tested. Lastly, the findings supported the proposition that new improvements are assessed at a greater percentage of market value than are older improvements.

CHAPTER III 11

FINDINGS OF THE EFFECTIVE RATE OF TAXATION METHOD 49

The effective rate of taxation provides another approach for analyzing the property tax for cities, ^{provinc} counties, and ^{national} states. While the sales ratio method examines the property tax, using gross assessed valuation, and thereby avoiding the effect of the homestead exemption, the effective rate of taxation method recognizes the homestead exemption by measuring both the relative gross and net tax burdens. The only difference between the two methods is that the sales ratio method measures the percentage of gross assessed valuation to market value, and the effective rate of taxation method measures the percentage of gross and actual taxes to market value. First, the advantages of the effective rate of taxation method will be discussed. This will be followed by a discussion of the general findings for 196⁷⁸~~2~~ and by a summarization of the important findings.

One advantage of the effective rate of taxation method is that it permits the comparison of effective tax burdens between cities, ^{provinc} counties, and ^{national} states. The effective rate is more accurate than comparing millage levies, since these levies do not give any indication as to the underlying tax base or the effective tax burden. For example, a high millage levy and a small tax base for one tax district may amount to a smaller tax bill than for a district with a low millage levy and a large tax

base. The millage levy is determined by dividing the total government budget by the total assessed value of real property of the governing body. Thus, the millage levy is only a means of allocating the expenses of government to each property owner according to his assessed valuation; it does not give any indication as to the underlying tax base.

Also, the knowledge of the effective rate of taxation permits the estimation of total property value for any given class of property.¹ For example, if total taxes in a tax district from residential property amounts to 60,000 dollars and the estimated effective rate is 1.5 percent, then the total value of residential property would be estimated at 4,000,000 dollars (60,000 divided by 1.5). This adjustment of property tax receipts provides a tool for comparing tangible wealth between localities, ^{business, national} counties, and states.

E. Scott Maynes and James N. Morgan have pointed out that the effective rate of taxation is also helpful in comparing "...differences in the level of public services provided."² The effective rate, unlike millage levies, reveals the underlying tax base and is an indication of the ability of units of government to provide adequate governmental services. Firms seeking new plant locations will investigate the ability of governmental units to provide adequate services as measured by the effective rate of taxation.

¹E. Scott Maynes and James N. Morgan, "The Effective Rate of Real Estate Taxation: An Empirical Investigation," The Review of Economics and Statistics, XXXIX (February, 1957), p. 14.

²Ibid.

The knowledge of the effective rate of taxation also permits the tax officials to evaluate the effectiveness of assessment procedures within their taxing jurisdiction. According to E. Scott Maynes and James N. Morgan:

From the viewpoint of real estate enactments, the ideal outcome of the assessment procedures is that the effective rate of taxation for all properties in the same class be identical. Income, house value, race or other attributes of the owner should not affect the results of the assessment procedure.³

Even though complete uniformity of the tax burden is seldom achieved in practice, the knowledge of the effective rate of taxation permits the assessing officials to minimize any wide differences in tax burden within and between classes of property.

Findings ⁸

The findings of the effective rate of taxation method for 1962⁷⁸ will be discussed in relation to the level of the tax burden and to the uniformity of the tax burden. The categories of real property to be examined are all property, residential property, business property, and unimproved property. The gross effective rate is the taxes that are paid on the gross assessed valuation divided by the market value. In those groups including residential property, the net effective rate, i.e., actual taxes divided by the market value, will be introduced to see the effect of the homestead exemption on the tax bill for that group.⁴

³Ibid.

⁴The complete findings of the effective rate of taxation method are presented in Appendix A, Tables II and III.

Also, the findings regarding the effective tax burden will be discussed within these groups: residential versus business property, unimproved versus improved property, tax burden according to market value, and tax burden according to age of improvements.

All Property

The average gross effective rate of taxation for all property in ~~Samuel~~ Stillwater is ^{1.3}~~1.2~~ percent. This means that on the average, a piece of property bears a tax burden of ^{1.3}~~1.2~~ percent of its market value. The average net effective rate of taxation is ^{1.0} percent, which shows that in the presence of the homestead exemption the effective level of the tax burden is reduced by ^{.3}~~.2~~ percent.

Speaking in terms of tax burden uniformity, the ideal situation is that all property should share the same percentage tax burden, i.e., an identical effective rate of taxation. ~~But in Stillwater this is not the case, and this nonuniformity of the tax burden is demonstrated by a coefficient of dispersion for the gross effective rate of 45.0 percent and a coefficient of 52.8 percent for the net effective rate. The increase of 7.8 percent from the gross coefficient is caused by the homestead exemption, since some of the residential properties received the exemption, while the remainder of the residential, business, and unimproved property did not receive such exemptions. This means that property not receiving an exemption had a higher tax bill to pay than did exempted property.~~

Residential Property

Residential property, according to this study, carries the highest level of tax burden for any class of property with an average gross effective rate of ^{1.5}1.4 percent. According to this figure, the average homeowner pays ^{1.5}1.4 percent of his property's market value in taxes. The tax burden for some homeowners is lightened by the granting of homestead exemptions which reduce the level of tax burden down to the average net effective rate of ^{1.3}1.2 percent.

The granting of homestead exemptions increases the degree of non-uniformity of tax burdens. Remembering that small coefficients reflect greater uniformity, the gross effective rate of taxation shows that residential property is the most uniformly assessed with a gross coefficient of dispersion of ^{36.6}35.6 percent followed by ^{39.3}38.3 percent and ^{46.0}45.0 percent for business and unimproved property. However, the net effective rate, which considers the homestead exemption, illustrates the very opposite with a net coefficient of dispersion of ^{46.6}45.6 percent. This makes residential property bear the least uniform tax burden of any class of property.

Business Property

Business property, which receives no homestead exemption, has an average gross and net effective tax burden of .9 percent. This means that an average piece of business property in 1962 paid ⁷⁸.9 percent of its market value in taxes.

Business property as compared to other types of property also had the smallest coefficient of dispersion, and, therefore, the greatest degree

of tax burden uniformity. For example, the coefficients of dispersion for the net effective rate was ^{38.3} 38.3 percent for business property, ^{46.0} 45.0 percent for unimproved property, and ^{46.6} 45.6 percent for residential property. This indicates that business owners share actual property taxes more equitably than any other class of property.

Unimproved Property

The findings of the gross effective rate of taxation show that unimproved property has the lowest level of tax burden with a net effective rate of ^{.2} .2 percent. This illustrates the tax advantage that owners of vacant lots receive.

The coefficient of dispersion, which shows the variation of the tax burdens between pieces of unimproved property, indicated a net coefficient of ^{46.0} 45.0 percent. Vacant lots are taxed more uniformly than residential property as evidenced by the coefficients of ^{38.3} 38.3 percent and ^{46.6} 45.6 percent for business and residential property respectively.

Residential Versus Business Property

The coefficient of dispersion for the gross effective rate indicates that residential property shares the gross tax burden more uniformly than any other class of property. Remembering that small coefficients reflect less dispersion of data, and, therefore, greater uniformity, residential property has a coefficient of ^{36.6} 35.6 percent, which is smaller than the coefficients of ^{38.3} 38.3 percent and ^{46.0} 45.0 percent for business and unimproved property.

However, by considering the homestead exemption, residential property now has the least uniform tax burden for any class of property.

For example, the coefficients of dispersion for the net effective rate are ^{46.6}45.6 percent, ^{39.3}38.3 percent, and ^{46.0}45.0 percent for residential, business, and unimproved property respectively. Consequently, by considering the actual taxes paid, business property shares the tax burden more uniformly than does residential property.

Unimproved Versus Improved Property

The owners of unimproved property (vacant lots) vis-a-vis improved property (residential and business) are benefited by the low level of tax burden. For example, the average net effective rate for vacant lots is ³.2 percent. This tax advantage encourages the holding of unimproved land for speculative purposes. Moreover, the low taxes are not justified in terms of taxpayer equity.

Tax Burden According to Market Value

The ideal situation is that all property, regardless of market value, should pay the same percentage of taxes. The findings show that this is not the case, and, in fact, the tax burden falls as the market value of property rises. For example, property with market value up to 10,000 dollars has the highest average net effective rate of taxation of ^{1.7}1.6 percent, which is considerably above the average net effective rate of ^{1.2}1.1 percent for property in the 10,000 to 20,000 dollar range and is also above the average net rate of ^{.8}.8 percent for property with market value over 20,000 dollars.

Tax Burden According to Age of Improvements

Improved property, regardless of age, should be assessed at the same percentage of market value, thereby making the relative tax burden uniform. This is not the case in Stillwater. For example, the average net effective rate of taxation is 1.0 percent for 1958-1962 improvements, 1.4 percent for 1944-1958 improvements, and 1.3 percent for 1900-1944 improvements. These figures indicate that property built between 1900 and 1958 carried the heaviest actual tax burden.

Summary

The effective rate of taxation analyzed the differences in the effective tax burden within and between residential, business, and unimproved property. One of the most important findings was the effect of the homestead exemption. It was revealed that the homestead exemption reduced the average level of the tax burden for some residential property but increased the tax inequity between the exempted property and the remainder of the nonexempted residential property. Also, the homestead exemption tended to level the differences in effective rates between residential, business, and unimproved property. Consequently, by using the effective rate of taxation method, one can see the disturbing effect of the homestead exemption on property taxation.

CHAPTER IV

CONCLUSIONS AND SUMMARY 23

Conclusions 11

The sales ratio method and the effective rate of taxation method aided in examining property tax assessment in ^{Suburb - Fairland} Stillwater, Oklahoma. These two methods were essential in determining the influence on assessment of such characteristics as type of property, age of property, and market value of property. Some of the basic conclusions of both methods are discussed in subsequent sections. The conclusions regarding the findings of the sales ratio method will be presented first. Then, the conclusions of the effective rate of taxation method will be discussed. The conclusions for both methods will be of a general nature, since the specific findings have been discussed in the two preceding chapters.

Sales Ratio Method

1. The average level of assessment for all property has declined from an average ratio of ^{17.88} ~~16.88~~ percent in 1956 to ⁷² ~~16.68~~ percent in 1962. However, the median ratio, by avoiding the extreme values, indicated an increase in the level of assessment with median ratios of ^{16.90} ~~15.90~~ percent and ^{19.90} ~~18.90~~ percent for 1956 and ⁷² ~~1962~~, respectively. The difference between the mean and the median was reconciled by pointing out that the fall in the

level of assessment for unimproved property contributed greatly to the fall in the average level of assessment for all property in 1962.

2. Residential property had the highest average assessment ratio for any class of real property in 1962. For example, the average ratio was ^{20.63}19.03 percent for residential property as compared to ^{14.84}13.84 percent and ^{3.44}3.44 percent for business and unimproved property. The assessment of residential property was quite high when compared to the low assessment of other types of real property.

3. Speaking in relation to assessment uniformity, residential property was the most uniformly assessed class of property. The coefficients of dispersion were ^{21.44}20.44 percent for residential property, ^{36.75}35.75 percent for unimproved property, and ^{41.39}40.39 percent for business property. These coefficients indicate that residential property is assessed the most uniformly, while business property has the greatest degree of nonuniformity of assessment.

4. The average assessment ratio of improved property fell as the value of that property increased. For example, if a person owned a 10,000 dollar house in ^{Sample} Stillwater, he would pay taxes on an assessed valuation amounting approximately to an average of ^{21.93}20.93 percent of market value. Accordingly, a 20,000 dollar house would have an average assessed valuation of ^{20.26}19.26 percent of market value, and a house selling for over 20,000 dollars would have an average assessed valuation of ^{14.74}13.94

percent. This decline in the average assessment ratio for expensive property tends to be unfair, since the more expensive property demonstrates the greater ability to pay.

5. New improvements in ^{Samuel} Stillwater were assessed at a larger percentage of market value than were older improvements. For example, the average assessment ratios were ^{20.86} 19.86 percent for ^{74 78} 1958-1962 improvements, ^{21.77} 20.77 percent for ^{70 74} 1944-1958 improvements, and ^{17.42} 16.42 percent for the oldest improvements dating from ^{66 70} 1900-1944. This means that new improved property was assessed at a greater percentage of market value, and, therefore, shared a heavier tax burden than older improved property.

Also, property with new improvements, as a class, was assessed more uniformly than old improved property. This contention is supported by the coefficient of dispersion. Remembering that small coefficients reflect assessment uniformity, the coefficients of ^{9.61} 8.61 percent, ^{20.98} 19.98 percent, and ^{24.39} 23.39 percent were found for improvements built during the periods of ^{70 78} 1958-1962, ^{70 74} 1944-1958, and ^{66 70} 1900-1944, respectively. The newest improved property (^{74 78} 1958-1962) had the lowest coefficient and the greatest degree of assessment uniformity.

Effective Rate of Taxation Method

1. The net effective rate of taxation revealed that the granting of the homestead exemption increased the degree of inequity within residential property. For example, the coefficient of dispersion for the gross effective rate, which ignored the

homestead exemption, was ^{35.6} 35.6 percent. The coefficient of dispersion for the net effective rate was ^{45.6} 45.6 percent, which was above the coefficients of ^{38.3} 38.3 percent for business property and ^{45.0} 45.0 percent for unimproved property. The net effective rate revealed that the homestead exemption increased the tax inequities and made residential property share the tax burden in the least uniform manner.

2. Residential property also has the greatest tax burden of any class of property. The net effective rates were ^{1.2} 1.2 percent for residential property, ^{.9} .9 percent for business property, and ^{.2} .2 percent for unimproved property. These figures show that owners of business and unimproved property as compared to home owners receive a tax advantage.

Summary

The objective of this study has been to determine the degree of assessment of uniformity in ^{Sanct} Stillwater, ^{the} Oklahoma. The basic data regarding the assessment of real property were collected by the use of the sales ratio method and by the effective rate of taxation method. The sales ratio method measured the percentage of gross assessed valuation to the market value of each individual property sample, while the effective rate of taxation method measured the percentage of taxes to market value.

The findings of both methods were then used to test certain hypotheses concerning the assessment of real property. These hypotheses were:

- (1) residential property is assessed more uniformly than business property;
- (2) unimproved property is assessed at a lower percentage of

market value than is improved property; (3) improved property of low market value is assessed at a higher percentage of market value than is improved property of high market value; and (4) new improvements are assessed at a greater percentage of market value than are older improvements. All of the hypotheses were successfully tested with the study findings.

The basic findings of the sales ratio method revealed that residential property had the largest average assessment ratio for any class of real property. Residential property also exhibited the greatest degree of assessment uniformity, followed by unimproved and business property, respectively. Other sales ratio findings showed that newly improved property in ^{Smart} Stillwater was assessed at a greater percentage of market value than was older property. Market value was also found to exert a definite influence on assessment, since the average assessment ratio of improved property declined as the market value increased.

The basic findings of the effective rate of taxation method showed that residential property had the greatest average tax bill for any class of real property, while vacant lots had the smallest average tax bill. The effective rate of taxation method also revealed the effect of the homestead exemption on the uniformity of the tax burden for residential property. The coefficient of dispersion for the net effective rate indicated that residential property shared taxes least uniformly for any class of property when the homestead exemption was considered.

Finally, as a basis for further action, the author feels that such studies of property assessment are necessary in order to improve

County *fairly*
assessment practices for all counties in Oklahoma. Furthermore, these studies need to be conducted periodically in order to determine needed changes in property assessment practices.

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APPENDICES 10

APPENDIX A 13

TABULATION OF FINDINGS 22

TABLE I → 1956 + 1962 + 1

STATISTICAL SUMMARY OF THE SALES RATIO METHOD: 1956^a AND 1962^b 62

Classification	First ⁵ Quartile		Second ⁶ Quartile		Third ⁵ Quartile		Inter ⁵ Quartile Range		Semi-Inter ¹⁰ Quartile Range		Median ⁶	
	1956	1962	1956	1962	1956	1962	1956	1962	1956	1962	1956	1962
All Property	9.58	12.78	15.90	18.90	24.08	22.05	14.50	9.27	7.25	4.64	15.90	18.90
Residential	15.70	15.25	21.95	19.57	26.38	22.31	10.68	7.06	5.34	3.53	21.95	19.57
Business	8.20	7.23	19.00	13.08	24.30	16.47	16.10	9.24	8.05	4.62	19.00	13.08
Unimproved	6.70	2.11	8.00	3.08	13.30	4.44	6.60	2.33	3.30	1.16	8.00	3.08
Date of Improvements												
1958-1962	--	18.87	--	20.30	--	21.12	--	2.25	--	1.12	--	20.30
1944-1958	--	19.06	--	22.86	--	24.85	--	5.79	--	2.90	--	22.86
1900-1944	--	12.86	--	15.02	--	19.81	--	6.95	--	3.48	--	15.02
Computed Value (Price)												
0-\$10,000	17.30	16.08	23.30	22.08	26.70	24.95	9.40	8.87	4.70	4.44	23.30	22.08
\$10,000-\$20,000	14.20	17.38	23.90	19.89	26.35	22.20	12.15	4.82	6.08	2.41	23.90	19.89
Over \$20,000	8.20	9.36	19.00	13.27	22.00	18.95	13.80	9.59	6.90	4.80	19.00	13.27

APPENDIX A, TABLE I (Continued)

Classification	Arithmetic ¹⁰ Mean		Average ⁷ Deviation		Standard ⁸ Deviation		Coefficient ¹¹ of Dispersion (Average)		Coefficient ¹¹ of Dispersion (Standard)	
	1956	1962	1956	1962	1956	1962	1956	1962	1956	1962
All Property	17.88 16.88	17.48 16.68	5.00	3.64	8.30	7.35	29.62	21.82	49.17	44.06
Residential	21.35	19.03	5.29	3.89	6.25	5.25	24.78	20.44	29.27	27.58
Business	19.78	13.84	7.70	5.59	9.55	6.82	38.93	40.39	48.28	49.28
Unimproved	10.16	3.44	4.05	1.23	7.50	2.70	39.86	35.75	73.82	78.48
Date of Improvements										
1958-1962	--	19.86	--	1.71	--	3.25	--	8.61	--	16.36
1944-1958	--	20.77	--	4.15	--	5.90	--	19.98	--	28.41
1900-1944	--	16.42	--	3.84	--	4.80	--	23.39	--	29.23
Computed Value										
0-\$10,000	22.85	20.93	5.14	4.42	5.60	5.20	22.59	21.12	24.51	24.85
\$10,000-\$20,000	21.32	19.26	5.86	3.34	6.95	4.95	27.48	17.34	32.60	25.70
Over \$20,000	15.70	13.94	5.78	4.52	6.40	4.85	36.82	32.42	40.76	36.55

^aSource: *King - Homestead* *assessed valuation (Second edition - 1974) pp. 52-61*
 Robert W. Pittman, "A Case Study of Property Assessment for Taxation Purposes in Stillwater, Oklahoma," (unpublished Master's thesis, Oklahoma State University, 1957), pp. 66-74.

^bSource: The figures for 1962 are computed from Appendix A, Tables IV, V, VI, VII, and VIII.

Note: 1. Values = 20.52 Ratio

APPENDIX A, TABLE II ²⁰

STATISTICAL SUMMARY OF THE GROSS EFFECTIVE RATE

Classification	13		5		6		5		5		10		11	
	Mean	Median	First Quartile	Second Quartile	Third Quartile	Inter Quartile Range	Semi-Inter Quartile Range	Coefficient of Dispersion (Average)						
All Property	1.2	1.3	.7	1.2	1.5	.8	.4	45.0						
Residential	1.4	1.3	1.0	1.4	1.6	.6	.3	35.6						
Business	.9	.9	.5	.9	1.4	.9	.4	38.3						
Unimproved	.2	.2	.1	.2	.3	.2	.1	45.0						
Date of Improvements														
1958-1962	1.4	1.3	1.2	1.3	1.4	.2	.1	12.6						
1944-1958	1.6	1.6	1.3	1.6	1.6	.3	.2	27.6						
1900-1944	1.5	1.0	.8	1.0	1.2	.4	.2	60.9						
Computed Value														
0-\$10,000	1.6	1.4	1.0	1.4	1.7	.7	.4	44.5						
\$10,000-\$20,000	1.4	1.3	1.2	1.3	1.6	.4	.2	26.6						
Over \$20,000	.9	.9	.6	.9	1.2	.6	.3	31.3						

Source: These findings are computed from Appendix A, Tables IV, V, VI, VII, and VIII.

APPENDIX A, TABLE III 21

STATISTICAL SUMMARY OF THE NET EFFECTIVE RATE

Classification	Mean	Median	First Quartile	Second Quartile	Third Quartile	Inter Quartile Range	Semi-Inter Quartile Range	Coefficient of Dispersion (Average)
All Property	1.0	.9	.4	.9	1.2	.8	.4	52.8
Residential	1.2	1.0	.8	1.0	1.3	.5	.2	45.6
Business	.9	.9	.5	.9	1.4	.9	.4	38.3
Unimproved	.2	.2	.1	.2	.3	.2	.1	45.0
Date of Improvements								
1958-1962	1.0	.9	.9	.9	1.1	.2	.1	14.1
1944-1958	1.4	1.1	.9	1.1	1.6	.7	.4	45.3
1900-1944	1.3	.9	.5	.9	1.3	.8	.4	68.2
Computed Value								
0-\$10,000	1.6	1.6	.8	1.6	1.8	1.0	.5	53.2
\$10,000-\$20,000	1.1	1.0	.8	1.0	1.2	.4	.2	37.1
Over \$20,000	.8	.9	.6	.9	1.0	.4	.2	27.2

Source: These findings are computed from Appendix A, Tables IV, V, VI, VII, and VIII.

20 APPENDIX A, TABLE IV

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 5 6
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RESIDENTIAL PROPERTY FINDINGS PRESENTED BY ASSESSMENT RATIO, GROSS EFFECTIVE RATE OF TAXATION, AND NET EFFECTIVE RATE OF TAXATION

Sales Form Number	Age of Improvements (Years)	Homestead Exemption (Dollars)	Gross Assessed Value (Dollars)	Computed Market Value (Dollars)	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
52	18	1,000	1,530	22,256	6.88	.5	.2
1	9	0	1,000	11,124	8.99	6.6	6.6
41	20	0	2,470	26,250	9.41	.6	.6
65	--	1,000	1,720	18,250	9.43	.6	.3
64	--	0	2,410	21,733	11.09	.7	.7
67	2	0	1,875	16,750	11.19	.7	.7
55	35	445	445	3,750	11.87	.1	--
12	25	0	1,310	10,250	12.78	.8	.8
25	21	1,000	1,950	15,250	12.79	.8	.4
79	22	1,000	1,325	10,250	12.93	.8	.2
68	18	0	1,330	10,250	12.98	.9	.9
76	30	0	3,750	28,250	13.27	.9	.9
38	--	1,000	1,470	10,750	13.67	.9	.3
74	--	0	1,250	8,750	14.29	.9	.9
45	8	1,000	1,045	7,250	14.41	1.0	.04
75	35	1,000	2,280	15,750	14.48	1.0	.5
36	20	0	1,765	11,750	15.02	1.0	1.0
20	35	995	995	6,250	15.92	1.1	--
32	25	0	1,530	9,250	16.54	1.1	1.1
15	30	1,000	1,160	6,750	17.19	1.1	.2
59 ^a	1	1,000	3,065	17,750	17.27	--	--
57	7	1,000	2,880	16,250	17.72	1.2	.8
23	2	0	3,000	16,750	17.91	1.2	1.2
9	--	0	2,140	11,750	18.21	1.2	1.2
70 ^a	1	1,000	4,240	23,250	18.24	--	--

APPENDIX A, TABLE IV (Continued)

Sales Form Number	Age of Improvements (Years)	Homestead Exemption (Dollars)	Gross Assessed Value (Dollars)	Computed Market Value (Dollars)	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
46	2	1,000	4,270	23,250	18.37	1.2	.9
27	2	1,000	3,350	17,750	18.87	1.2	.9
26 5	4	1,000	3,170	16,750	18.93	1.2	.9
30	2	1,000	2,875	14,750	19.49	1.3	.8
22	3	1,000	3,635	18,643	19.50	1.3	.9
43 ^a	6	1,000	3,190	16,347	19.51	1.3	.9
56 ^a	1	1,000	5,810	29,750	19.53	--	--
71	1	1,000	3,565	18,250	19.53	1.3	.9
73	--	1,000	2,690	13,750	19.56	1.3	.8
50	34	0	3,375	17,250	19.57	1.3	1.3
60	11	1,000	4,880	24,637	19.81	1.3	1.0
51	8	0	3,485	17,250	20.20	1.3	1.3
42	4	1,000	4,010	19,750	20.30	1.3	1.0
26 ^a	2	1,000	3,810	18,750	20.32	1.3	1.0
77 ^a	1	1,000	3,005	14,750	20.37	--	--
11 ^a	2	1,000	4,800	23,250	20.65	1.4	1.1
80 ^a	2	0	2,740	13,250	20.68	--	--
17	25	0	1,000	4,750	21.05	6.6	6.6
3	2	1,000	2,900	13,750	21.09	1.9	1.4
4	1	1,000	3,115	14,750	21.12	1.4	.9
58	5	0	3,115	14,750	21.12	1.4	1.4
49	2	0	2,915	13,750	21.20	1.4	1.4
78	40	0	600	2,750	21.82	1.4	1.4
44 ^a	16	1,000	2,600	11,750	22.13	1.4	.9
40 ^a	2	0	3,160	14,250	22.18	--	--
33	2	1,000	3,275	14,750	22.20	1.5	1.0
47	12	1,000	1,955	8,750	22.34	1.5	.7
14	3	1,000	2,520	11,250	22.40	1.5	.9

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APPENDIX A, TABLE IV (Continued)

Sales Form Number	Age of Improvements (Years)	Homestead Exemption (Dollars)	Gross Assessed Value (Dollars)	Computed Market Value (Dollars)	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
53	8	0	3,330	14,750	22.58	1.5	1.5
66	35	960	960	4,250	22.59	.2	--
21	12	1,000	2,640	11,200	23.57	1.6	1.0
24	--	0	1,010	4,250	23.77	1.6	1.6
5 ²⁶	7	0	2,990	12,463	23.99	1.6	1.6
8	6	0	2,180	8,975	24.29	1.6	1.6
48	6	1,000	2,790	11,250	24.80	1.6	1.0
2	11	1,000	4,030	16,250	24.80	1.6	1.2
18 ¹¹	12	0	2,725	10,896	25.01	1.6	1.6
63	17	0	2,210	8,750	25.26	1.7	1.7
62 ⁶⁹	4	1,000	3,115	12,250	25.43	1.7	1.1
39	14	1,000	2,735	10,750	25.44	1.7	1.1
61	13	1,000	2,920	11,250	25.96	1.7	1.1
69	37	0	1,660	5,750	28.87	1.9	1.9
7	--	0	2,725	9,250	29.49	1.9	1.9

^aThese residential properties were built in 1962 but were not assessed until 1963.

20
APPENDIX A, TABLE V 19

BUSINESS PROPERTY FINDINGS PRESENTED BY ASSESSMENT RATIO AND
EFFECTIVE RATE OF TAXATION

Sales Form Number	Age of Improvements (Years)	Gross Assessed Value (Dollars)	Computed Market Value (Dollars)	Assessment Ratio (Percent)	Effective Rate of Taxation ^a
82	16	1,525	29,750	5.13	.4
72	85	2,400	25,750	9.32	.6
85	72	5,200	39,750	13.08	.9
54	54	4,900	29,750	16.47	1.1
16	82	1,070	4,250	25.18	1.7

^aThis applies to both the gross and net effective rate of taxation since homestead exemptions are not granted to business property.

19
APPENDIX A, TABLE VI 20

UNIMPROVED PROPERTY FINDINGS PRESENTED BY ASSESSMENT RATIO
AND EFFECTIVE RATE OF TAXATION

Sales Form Number	Age of Improvements (Years)	Gross Assessed Value (Dollars)	Computed Market Value (Dollars)	Assessment Ratio (Percent)	Effective Rate of Taxation ^a
95 ✓	--	100	5,614	1.78	.1
19 ✓	--	100	4,750	2.11	.1
90 ✓	--	100	4,750	2.11	.1
99 ✓	--	100	4,750	2.11	.1
88 ✓	--	100	3,750	2.67	.2
10 ✓	--	100	3,250	3.08	.2
28 ✓	--	100	2,750	3.64	.2
96 ✓	--	100	2,250	4.44	.3
97 ✓	--	100	2,250	4.44	.3
93 ✓	--	100	1,750	5.71	.4
13 ✓	--	100	1,750	5.71	.4

^aThis applies to both the gross and net effective rate of taxation since homestead exemptions are not granted to unimproved property.

19 APPENDIX A, TABLE VII

AGE OF IMPROVEMENTS--ASSESSMENT RATIO, GROSS EFFECTIVE RATE OF TAXATION, AND NET EFFECTIVE RATE OF TAXATION

Sales Form Number	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
1958-1962			
67	11.19	.7	.7
59	17.27	--	--
23	17.91	1.2	1.2
70	18.24	--	--
46	18.37	1.2	.9
27	18.87	1.2	.9
6	18.93	1.2	.9
30	19.49	1.3	.8
22	19.50	1.3	.9
56	19.53	--	--
71	19.53	1.3	.9
42	20.30	1.3	1.0
26	20.32	1.3	1.0
77	20.37	--	--
11	20.65	1.4	1.1
80	20.68	--	--
3	21.09	1.9	1.4
4	21.12	1.4	.9
49	21.20	1.4	1.4
40	22.18	--	--
33	22.20	1.5	1.0
14	22.40	1.5	.9
62	25.43	1.7	1.1
1944-1958			
52	6.88	.5	.2
1	8.99	6.6	6.6
68	12.98	.9	.9
45	14.41	1.0	.04
57	17.72	1.2	.8
43	19.51	1.3	.9
60	19.81	1.3	1.0
51	20.20	1.3	1.3
58	21.12	1.4	1.4
44	22.13	1.4	.9
47	22.34	1.5	.7
53	22.58	1.5	1.5
21	23.57	1.6	1.0
5	23.99	1.6	1.6

APPENDIX A, TABLE VII (Continued)

Sales Form Number	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
8	24.29	1.6	1.6
48	24.80	1.6	1.0
2	24.80	1.6	1.2
18	25.01	1.6	1.6
16	25.18	1.7	1.7
63	25.26	1.7	1.7
39	25.44	1.7	1.1
61	25.96	1.7	1.1
1900-1944			
41	9.41	.6	.6
55	11.87	.1	--
12	12.78	.8	.8
25	12.79	.8	.4
79	12.93	.8	.2
85	13.08	.9	.9
76	13.27	.9	.9
75	14.48	1.0	.5
36	15.02	1.0	1.0
20	15.92	1.1	--
32	16.54	1.1	1.1
15	17.19	1.1	.2
50	19.57	1.3	1.3
17	21.05	6.6	6.6
78	21.82	1.4	1.4
66	22.59	.2	--
69	28.87	1.9	1.9

Source: Appendix A, Tables IV and V.

23
APPENDIX A, TABLE VIII 22

IMPROVED PROPERTY ARRANGED BY COMPUTED VALUE--ASSESSMENT RATIO, GROSS
EFFECTIVE RATE OF TAXATION, AND NET EFFECTIVE RATE OF TAXATION

Sales Form Number	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
0-\$10,000			
55	11.87	.1	--
74	14.29	.9	.9
45	14.41	1.0	.04
20	15.92	1.1	--
32	16.54	1.1	1.1
15	17.19	1.1	.2
17	21.05	6.6	6.6
78	21.82	1.4	1.4
47	22.34	1.5	.7
66	22.59	.2	--
24	23.77	1.6	1.6
8	24.29	1.6	1.6
16	25.18	1.7	1.7
63	25.26	1.7	1.7
69	28.87	1.9	1.9
7	29.49	1.9	1.9
\$10,000-\$20,000			
1	8.99	6.6	6.6
65	9.43	.6	.3
67	11.19	.7	.7
12	12.78	.8	.8
25	12.79	.8	.4
79	12.93	.8	.2
68	12.98	.9	.9
38	13.67	.9	.3
75	14.48	1.0	.5
36	15.02	1.0	1.0
59	17.27	--	--
57	17.72	1.2	.8
23	17.91	1.2	1.2
9	18.21	1.2	1.2
27	18.87	1.2	.9
6	18.93	1.2	.9
30	19.49	1.3	.8
22	19.50	1.3	.9
43	19.51	1.3	.9
71	19.53	1.3	.9
73	19.56	1.3	.8

APPENDIX A, TABLE VIII (Continued)

Sales Form Number	Assessment Ratio (Percent)	Gross Effective Rate (Percent)	Net Effective Rate (Percent)
50	19.57	1.3	1.3
51	20.20	1.3	1.3
42	20.30	1.3	1.0
26	20.32	1.3	1.0
77	20.37	--	--
80	20.68	--	--
3	21.09	1.9	1.4
4	21.12	1.4	.9
58	21.12	1.4	1.4
49	21.20	1.4	1.4
44	22.13	1.4	.9
40	22.18	--	--
33	22.20	1.5	1.0
14	22.40	1.5	.9
53	22.58	1.5	1.5
21	23.57	1.6	1.0
5	23.99	1.6	1.6
48	24.80	1.6	1.0
2	24.80	1.6	1.2
18	25.01	1.6	1.6
62	25.43	1.7	1.1
39	25.44	1.7	1.1
61	25.96	1.7	1.1
Over \$20,000			
82	5.13	.4	.4
52	6.88	.5	.2
72	9.32	.6	.6
41	9.41	.6	.6
64	11.09	.7	.7
85	13.08	.9	.9
76	13.27	.9	.9
54	16.47	1.1	1.1
70	18.24	--	--
46	18.37	1.2	.9
56	19.53	--	--
60	19.81	1.3	1.0
11	20.65	1.4	1.1

Source: Appendix A, Tables IV and V.

APPENDIX B

STATISTICAL FORMULAS

Arithmetic Mean

$$\bar{R} = \frac{\Sigma R}{n}$$

with

\bar{R} = Arithmetic mean of assessment ratios,

ΣR = sum of individual assessment ratios, and

n = number of items.

Median

$$M = \frac{n + 1}{2}$$

with

M = Median, and

$n + 1$ = the total number of items in the array plus one.

Quartile

$$Q_1 = \frac{(n + 1)}{4}$$

$$Q_3 = \frac{3(n + 1)}{4}$$

with

Q_1 = First quartile,

Q_3 = third quartile,

$(n + 1)$ = number of items in the array plus one, and

$3(n + 1)$ = number of items in the array plus one multiplied by

three to derive the third quartile.

Inter Quartile Range

$$Q_3 - Q_1$$

Semi-Inter Quartile Range

$$\frac{Q_3 - Q_1}{2}$$

Standard Deviation

To compute the standard deviation, the following work-sheet was prepared:

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ratio Intervals	Mid Value of Class	Frequencies f	Mid Point 22.5	Coded Mid Value d	fd	fd ²
00- 4.99	2.5		-20.00	-4		
5- 9.99	7.5		-15.00	-3		
10-14.99	12.5		-10.00	-2		
15-19.99	17.5		-5.00	-1		
20-24.99	22.5		0	0		
25-29.99	27.5		+5.00	+1		

The number of frequencies are placed in the respective intervals followed by the computations and the summing up of columns three, six, and seven. The totals of these three columns are then placed in the following formula:

$$s = \sqrt{\frac{\sum fd^2}{n} - \left(\frac{\sum fd}{n}\right)^2} \times \text{Class Interval}$$

From this formula the standard deviation is computed.

Average Deviation

The average deviation is the sum of the absolute deviations from the arithmetic mean of a statistical array, and it is expressed by:

$$A. D. = \frac{\sum(|R - \bar{R}|)}{n}$$

with

A. D. = Average deviation,

R = the individual assessment ratio,

\bar{R} = the mean assessment ratio, and

n = number of items.

Coefficient of Dispersion

The coefficient of dispersion may be calculated either with the standard deviation or the average deviation. The formulas for both ways are:

$$D_s = \frac{S}{\bar{R}} 100$$

$$D_{a.d.} = \frac{A.D.}{\bar{R}} 100$$

with

D_s = Coefficient of dispersion using the standard deviation,

$D_{a.d.}$ = coefficient of dispersion using the average deviation,

\bar{R} = arithmetic mean,

S = standard deviation, and

A.D. = average deviation.

SALES DATA FORM

Year: 1962

Stillwater, Oklahoma

No. _____

Grantor: _____

Grantee: _____

Book: _____ Page: _____ Type of Deed: _____

Date of Transfer: _____ Date of Filing: _____

Encumbrances or Liens: _____

Legal Description	Deed	Assessment Data
	Stated Consideration Revenue Stamps:	Gross: _____ Homestead: _____ Net: _____ <hr/> 1961 Gross: _____ Net: _____

Assessment Book: _____ Page: _____ Line: _____

Age of Property: _____

Classification:

Breakdown of Assessment:

Land _____

Improvements _____

Residential

Business

Unimproved

Remarks:

Accept _____

Reject _____

APPENDIX C

LEGAL DESCRIPTION OF PROPERTY TRANSFERS

Sales Form Number

- 1 Lot twenty-four (24) and the south half of Lot twenty-five (25), Block three (3), Central Addition.
- 2 The west five (5) feet of Lot seven (7) and all of Lot eight (8) in Block eight (8) of Hert Subdivision of Blocks four (4) to nine (9) inclusive, College Homes Addition.
- 3 Lot six (6) in Block one (1), Watson Heights Addition.
- 4 The west twenty-four (24) feet of Lot fifteen (15) and the east thirty-six (36) feet of Lot sixteen (16), Block one (1), Highland Park Addition.
- 5 Lot five (5) in Block two (2) in Donaldson and Manning's First Addition.
- 6 Lot six (6) in Block one (1), Glover's Addition.
- 7 Lots thirteen (13) and fourteen (14) in Block eleven (11), Albert Pike Addition.
- 8 Lot six (6), Block three (3), Brown Moore Second Addition.
- 9 Lots eight (8), nine (9), and ten (10), Block thirteen (13), College Addition.
- 10 Lot two (2), Thompson's Sub-Division, Block ten (10), McFarland Heights Addition.
- 11 Lot six (6), Block three (3), Washington Heights Addition.
- 12 Lots four (4) and five (5), Block one (1), Classen Heights Addition.
- 13 Lot ten (10), Block four (4), Skyline Addition.
- 14 Lot twenty-five (25), Block fourteen (14), Highland Park Addition.

Sales Form Number

- 15 Lots eleven (11) and twelve (12), Block six (6), South College Addition.
- 16 The east forty (40) feet of Lots twenty-one (21), twenty-two (22), twenty-three (23), and twenty-four (24), Block twenty-one (21), Lowry's Second Addition.
- 17 Lot ten (10), Block seven (7), Barnes Addition.
- 18 Lots three (3) and four (4), Block two (2), Munger Addition.
- 19 Lot five (5), Block two (2), Washington Heights Addition.
- 20 The north forty-five (45) feet of the south ninety (90) feet of Lots one (1), two (2), and three (3) of Sub-Division of Lot four (4), Block one (1), East College Addition.
- 21 Lot twenty-eight (28), Block six (6), Highland Park Addition.
- 22 Lot six (6), Block two (2), Houck Addition.
- 23 Lot fifteen (15), Block eight (8), Donaldson Manning's Eastern Hills Addition.
- 24 Lots thirteen (13), fourteen (14), and fifteen (15), Block sixteen (16), Lowry's Second Addition.
- 25 Lot fourteen (14), Block six (6), College Gardens Addition.
- 26 Lot seven (7), Block nine (9), Third Section Lake-view Addition.
- 27 Lot fifteen (15), west thirteen (13) feet of Lot sixteen (16), Block two (2), Meyers' Sub-Division of Lot two (2) and N/2 of Lot one (1), Block three (3), McFarland Acres.
- 28 Lot five (5), Block one (1), Friedemann's Addition.
- 30 Lot one (1), Block four (4), Skyline Addition.
- 32 Lots nineteen (19) and twenty (20), Block forty-eight (48), Original Town.

Sales Form Number

- 33 Lot one (1), Block three (3), Skyline Addition.
- 36 Lots nine (9), ten (10), and eleven (11), Block two (2), Douglas Addition.
- 38 Lots nine (9) and ten (10), Block three (3), Original Town.
- 39 Lots thirty-six (36) and thirty-seven (37), Block one (1), Munger's Addition.
- 40 Lot three (3), Block two (2), Cedar Grove Addition.
- 41 Lots one (1) and two (2), Block twenty-four (24), Fourth Section of College Gardens.
- 42 Lots thirteen (13), fourteen (14), and fifteen (15), Block one (1), Sunset Heights Addition.
- 43 Lot five (5), Block five (5), West Sunset Heights Addition.
- 44 Lots thirty-four (34) and thirty-five (35), Block one (1), Munger's Addition.
- 45 Lots three (3) and four (4), Block twenty-two (22), Lowry's Second Addition.
- 46 Lots one (1) and two (2), Block twelve (12), Second Section Arnold Heights Addition.
- 47 Lot fifteen (15), Block nine (9), Highland Park Addition.
- 48 Lots thirty-nine (39), forty (40), and forty-one (41), Myrick's Sub-Division of Lot six (6), Parkersville Addition.
- 49 Lot eleven (11), Block six (6), Highland Park Addition.
- 50 Lots four (4), five (5), and six (6), Block five (5), College Circle Addition.
- 51 Lot ten (10), Block six (6), Ingham's Addition.
- 52 Lot sixteen (16), Block six (6), First Section of College Gardens Addition.

Sales Form Number

- 53 Lots fifteen (15) and sixteen (16), Block four (4), Sunset Heights Addition.
- 54 Lot eleven (11), Block thirty-two (32), Original Town.
- 55 North ninety (90) feet of Lot five (5), Block one (1), Duncans Addition.
- 56 Lot six (6), Block two (2), Washington Heights Addition.
- 57 Lot five (5), Block four (4), Second Section Hamilton Addition.
- 58 Lot four (4), Block four (4), Woodland Park Addition.
- 59 Lot eight (8), Block two (2), Cedar Grove Addition.
- 60 East twenty-five (25) feet of Lot seven (7) and all of Lot eight (8), Block seven (7), West Sunset Heights Addition.
- 61 Lots fifteen (15) and sixteen (16), Block five (5), Sunset Heights Addition.
- 62 Lot six (6), Block six (6), Highland Park Addition.
- 63 Lots five (5) and six (6), Corycraft Addition.
- 64 Lot six (6), Block four (4), Hartenbower Heights Addition.
- 65 Lots five (5) and six (6), Block nineteen (19), College Addition.
- 66 Lots four (4), five (5), and six (6), Block nine (9), Original Town.
- 67 Lot twenty-eight (28), Block five (5), Swim's Urban Development-Wildwood Addition.
- 68 Lots three (3) and four (4), Block two (2), Norwood Addition.
- 69 Lots fifteen (15) and sixteen (16), Block four (4), Burdick Addition.
- 70 Lot nine (9), Block eight (8), Donaldson and Manning's Eastern Hills Addition.

Sales Form Number

- 71 Lot five (5), Block eleven (11), Third Section Lake-view Addition.
- 72 East one hundred (100) feet of Lots eleven (11) and twelve (12), Block fifteen (15), Original Town.
- 73 Lot four (4), Block five (5), Arnold Heights Addition.
- 74 East seventy-two (72) feet of Lots eleven (11) and twelve (12), Block twenty-four (24), Original Town.
- 75 Lots nine (9) to twenty-four (24), Block six (6), Lewis Addition.
- 76 Lots five (5) and six (6), Block two (2), Duncan Addition.
- 77 North sixty-nine (69) feet of the south one hundred and fifteen (115) feet of Lot eight (8), Block eight (8), Fourth Section Hamilton Addition.
- 78 Lots eleven (11) and twelve (12), Block fifty-three (53), Original Town.
- 79 Lot seven (7), Block three (3), Glenwood Addition.
- 80 Lot sixteen (16), Block ten (10), Albert Pike Addition.
- 82 Lots twenty-seven (27), twenty-eight (28), and twenty-nine (29), Block two (2), Weaver Addition;
- 85 Lot seven (7), Block twenty-eight (28), Original Town.
- 88 Lot eight (8), Block three (3), Thomas Addition.
- 90 Lot six (6), Block two (2), Washington Heights Addition.
- 93 Lot seven (7), Block four (4), Skyline Addition.
- 95 Lot twelve (12), Block nine (9), Sunset Heights Addition.
- 96 Lot ten (10), Block nine (9), Third Section Wildwood Addition.
- 97 Lot sixteen (16), Block three (3), Hartenbower Heights Addition.
- 99 Lot three (3), Block three (3), Washington Heights Addition.

VITA

Jay Douglas Forsyth

Candidate for the Degree of

Master of Science

Thesis: A STUDY OF PROPERTY TAX ASSESSMENT IN STILLWATER, OKLAHOMA

Major Field: Economics

Biographical:

Personal Data: Born in Liberal, Kansas, July 23, 1941, the son of Jay and Sybil Forsyth.

Education: Attended grade school in Liberal, Kansas; graduated from Liberal High School in 1959; received the Bachelor of Arts degree from Fort Hays Kansas State College in 1963; completed requirements for the Master of Science degree in January, 1964.

Professional Experience: Worked for Pan American Petroleum Corporation as an accounting trainee in the summer of 1962. Served as a graduate assistant for the Department of Economics, Oklahoma State University, for the academic year 1963-1964.