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PROPERTY ASSESSMENT IN FORT WORTH.

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Economics, finance

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

PROPERTY ASSESSMENT IN FORT WORTH

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

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Norman, Oklahoma

1964

PROPERTY ASSESSMENT IN FORT WORTH

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ACKNOWLEDGMENTS

I wish to thank Dr. W. Nelson Peach, Professor of Economics at the University of Oklahoma, for suggesting this topic of research. As director of the dissertation, Dr. Peach gave unselfishly of his time and energies to the completion of the project.

Dr. William Chance, Dr. Alexander Kondonassis, Dr. James M. Murphy, and Dr. Jack L. Robinson, all of the University of Oklahoma, deserve grateful acknowledgment for their study of the draft and their suggestions for improvement of the completed work.

Mr. Phil Loving, the City Tax Assessor in Fort Worth, and his staff assisted in the collection of the data. Grateful acknowledgment is expressed to them and in particular to Mr. John Granger of the city tax office for his many hours of consultation concerning assessment procedures.

The member brokers of the Fort Worth Real Estate Board assisted in the collection and verification of sales data.

Many people at Texas Christian University assisted in this project. The use of the computer at Texas Christian University was made possible by Dr. Ike H. Harrison, Dean of the School of Business. Grateful appreciation is extended to him and to his staff who assisted in a variety of ways. Without the friendly assistance of the many students who assisted in the collection of the data, the faculty members who read segments of the draft, and staff members who edited and typed the manuscript, this work could not have been completed.

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PROPERTY ASSESSMENT IN FORT WORTH

CHAPTER I

INTRODUCTION

The general property tax in the United States has been subjected to a considerable amount of criticism which can be divided into two categories: that which applies to its theory and that which applies to its practical and administrative difficulties.¹ This dissertation deals with one facet of the administrative difficulties, namely, the assessment procedure.

The scope of this study is the assessment of business and residential real estate for tax purposes within the city limits of Fort Worth, Texas. The primary purpose of the study is to measure the variation that exists between the sale prices of properties and their assessed valuation by city taxing officials. Secondly, this study seeks to offer some explanations of the causes of these variations.

The Sampling Method

It was estimated that between 1958 and 1963 twelve thousand sales of real property occurred in the city of Fort Worth. From these twelve thousand properties a sample of 660 was drawn.

¹Harold M. Groves, Financing Government (5th ed., New York: Holt, Rinehart, and Winston, Inc., 1959), p. 50.

There was no single body of data available for all sales of properties; therefore the sales data were drawn from the following sources:

1. Deeds and records
2. Newspapers
3. The Multiple Listing Service²
4. The city tax office
5. Local real estate appraisers
6. The Commercial Recorder³

The Size of the Sample

After examination of the data, 660 items were selected. One hundred residential properties were selected for each year from 1958 through 1962, making a total of 500. Fifty sales of properties of residential classifications were selected from 1963, bringing the total number of residential properties to 550. Twenty commercial properties were selected for each year, 1958 through 1962. From 1963, ten were selected, bringing the total commercial properties to 110. The total verified sample, 660 properties, represented slightly over five per cent of the population of sales for the time period, and one-half of one per cent of all real properties in Fort Worth.

²The Multiple Listing Service, a cooperative venture of 71 real estate brokers in Fort Worth, publishes a weekly list of sales of property. Each property that a member broker lists for sale may be shown and sold by other member brokers. The listing broker is paid one-third of the selling commission; the selling principal (the owner of the brokerage firm), one-third; and the salesman, one-third.

³The Commercial Recorder is an independent daily publication of mortgages and realty sales in Tarrant County.

In the Texas courts, a sale which is more than five years old cannot be used as an estimate of value. (Duval v. Clark, Civ. App. 158 SW 2d 565.) Therefore, the sample included sales made during the five year period, 1958 to 1963. The sample was gathered in June of 1963, and this fact accounted for the inclusion of the half year of 1963.

How the Sample Was Derived

The primary source of data on sales of residential properties was the list compiled and published weekly by the Multiple Listing Service of the Fort Worth Real Estate Board, which included about one-fourth of all properties sold in the city for the years 1958 to 1963. This list gave the sale price, the listed price, the selling and listing brokers, and the date of the sale. A systematic sampling of the first two sales of each group of three, making a total of 2,000. The lists were compiled weekly and were arranged chronologically. Each week's list was alphabetized by the name of the street on which properties were sold. Properties were identified by their street addresses.

Of the 2,000 sales selected, only sales which met the following conditions were considered usable:

1. Only transactions by warranty deeds were considered.
2. Intra-family transactions were excluded.
3. Only sales between residents of Tarrant County or adjoining counties were considered.
4. Properties where a lease agreement was in evidence in the sale were excluded because the lease would affect the sale price, either increasing it or decreasing it.

5. Properties where trades took place were excluded.
6. Sales of properties out of the Fort Worth taxing district were excluded.

Once the individual property was found to meet the preceding conditions, the sale price had to be verified. The method of verification of sale price required that each property had to have a consistent evidence of the sale price in at least three of the following instances:

1. Amount of revenue stamps on deeds
2. Consideration as stated on deed
3. Asking price of properties in newspapers
4. General estimate of whether the sale meets legal, bonafide definition of fair market value⁴
5. Sale price as reported weekly by member realtors of the Multiple Listing Service
6. Sale price as indicated in title companies' records of sales contracts and closing statements.

The City Assessor's Office had compiled a list of 660 commercial properties sold between 1949 and midyear 1961. The list was compiled from deeds recorded at the Tarrant County Court House. Sales were drawn from this list by taking every sale listed for the years 1958 through midyear 1961. Two hundred and fifty sales were searched in an attempt

⁴The following legal definition of "market value" was presented to real estate brokers: "The amount of money that a person desiring to sell, but not required to do so, could, within a reasonable time procure for such a property from a person who desires and is able to buy such a property, but is not bound to do so." Realtors were asked to state whether in their opinion the specific sale was considered "bonafide" according to the preceding definition.

to verify their sale price. Additional data for sales of commercial properties came from the Commercial Recorder for the periods of June, 1961, to June, 1963. These sales were selected by taking the Commercial Recorder for the first day in each month and noting the deeds filed for that day. Ten sales of commercial properties were selected from the Commercial Recorder. The land value maps used by the city assessor were consulted to compile an additional list of commercial properties. This list contained 60 properties sold during this two year period. In all, 110 commercial properties, verified by three or more of the methods listed previously, were selected from these commercial lists.

The Nature of the Data

A considerable amount of information about individual properties was available from city tax records. The information included the legal description, street address, zoning, topographical classification of the land, use type, the availability of utilities and the condition of the abutting streets. Among the basic data were the dimensions of the land, adjustments according to size, shape and topography, the appraiser who evaluated the parcel, and the date of appraisal. Building permits issued on the property were included. The computation of the improvement valuation, land valuation, and total valuation was available. Any adjustments by the Board of Equalization were indicated on the tax cards. On the reverse side of the card were details of the improvement valuation including a diagram of the structure.

The preceding paragraph described the new tax card used by the City Tax Assessor. The cards used previously were essentially the same

but they had some minor differences. For example, on the old card, it was not possible to determine who appraised the property, while on the new cards, the appraiser was identified. The old card was used until 1961. The assessments of properties since that time have been recorded on the new card form.

A Description of the Property Tax

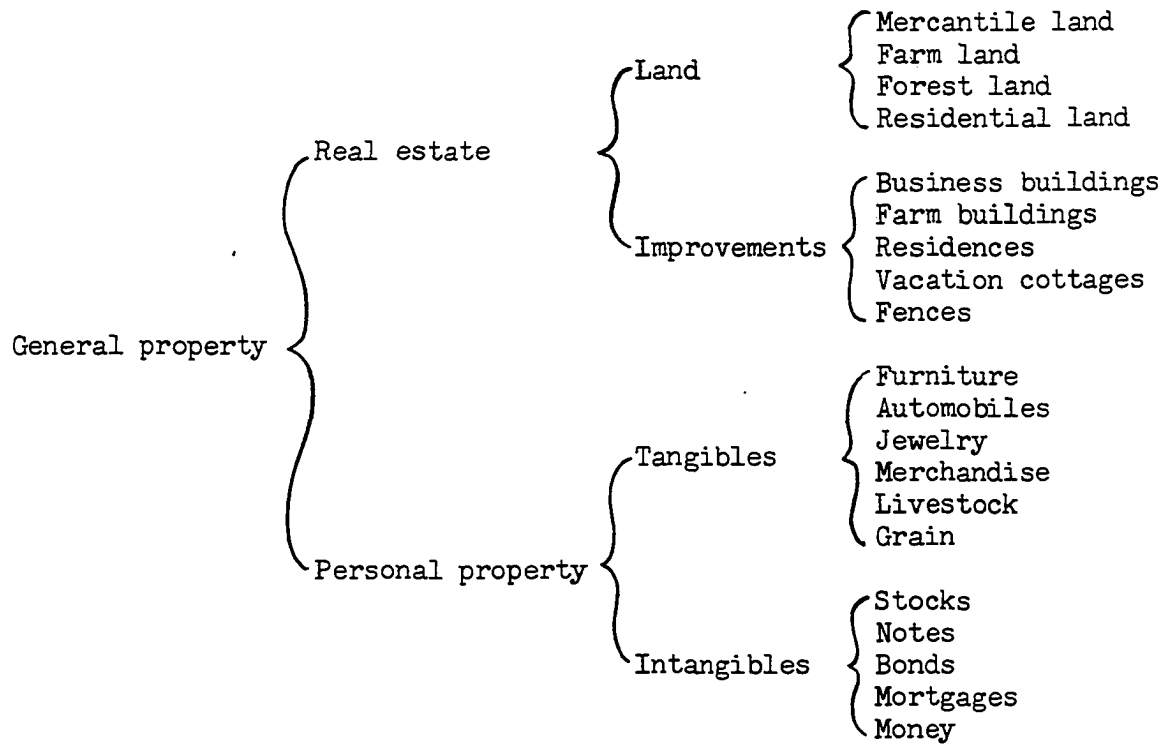
The property tax is a tax on wealth, tangible and intangible, which possesses exchange value. The problems surrounding the property tax make this description an oversimplification. An "ad valorem" or "at worth" tax is not nearly so universal nor so easily applied as the preceding description makes it appear. Property taxes are taxes on wealth, but wealth exists in many forms. Since no single method of assessment can be applied to all forms of wealth, classifications of different forms of wealth are necessary. Figure I provides a typical classification.

These classifications of property are also classifications of wealth. There is no distinction between wealth and property. Property is an object which is owned while wealth is all objects which can be held in exclusive possession. The difficulty in a tax on wealth is reflected in the classifications. In most states the property tax is primarily a tax on real estate. Taxes on personal property are diminishing because of the difficulty of listing personal property on the tax rolls.⁵

⁵Frederick Lucien Bird, The General Property Tax: Findings of the 1957 Census of Governments (Chicago: Public Administration Service, 1960), p. 18.

FIGURE I

GENERAL CLASSES OF PROPERTY FOR PROPERTY TAX ASSESSMENT



Source: Harold M. Groves, Financing Government (5th ed., New York: Holt, Rinehart, and Winston, Inc., 1959), p. 45.

The formal organization of administering the property tax consists of an eight step process: (1) Levy, (2) Original or local assessment, (3) Review of assessment, (4) Central assessing or equalization by the states, (5) Apportionment of taxes and setting the tax rates, (6) Collection of the tax, (7) Collection of the delinquent taxes, (8) Appeals to some judicial or quasi-judicial body.⁶

The extent of the success of the various steps in the taxation process is reflected by the degree of: (1) Fairness, as distinguished from arbitrariness; (2) Reduction of inequalities in wealth, income, power, and opportunity; (3) Conservation of human resources; (4) Preservation of a wide market and avoidance of oversaving; (5) Preservation of incentives; (6) Use of direct taxes as much as feasible; (7) Wide sharing of tax burden; (8) Adequacy of revenues; (9) Selection and application of taxes to provide business stability.⁷

Legal Problems

The Texas Constitution demands "fair market value" as the standard of value and the basis of taxation.⁸ However, courts have ruled that assessments at less than market value are legal if the assessments are uniform (Duval v. Clark, Civ. App. 158 SW 2d 565). The average ratio of assessed value to sale price in Texas is 0.16 and ratios for most communities are between 0.05 and 0.60 (Census of Governments, 1957). The requirement of fair market value serves two important legal functions.

⁶Leslie E. Carbert, "Full-Value Assessment Versus Fractional-Value Assessment," Proceedings of the Forty-Sixth Annual Conference on Taxation (Sacramento: National Tax Association, 1954), p. 174.

⁷Ibid.

⁸The term "true and full value" shall be held to mean the fair

One, it fulfills the requirements of the constitution with respect to equal protection under the laws in that the "fair market value" supplies a standard for the equitable apportionment of property tax levies among owners of property. Secondly, it fulfills the due process requirement of the Federal Constitution in that the individual has a basis for ascertaining whether or not a law imposing the tax has been equitably and fairly applied to him and his possessions. In other words, any form of equal protection under the law demands that all persons or objects in the same category and the same situation be similarly treated. Such legal concerns do not prevent classification of property by states, and ideally the classification should be such that all persons and property within the classifications are treated equally by the classification.

The importance of the legal requirement of equal protection to the owner under the property tax was pointed out by Robert Kilmer of the New York Board of Equalization and Assessment when he said:

One of the most distinguishing features of the property tax is that it is not merely a mathematical calculation but is based primarily on expert opinion and judgment, the expert opinion and judgment as to the value of property.⁹

In other words, where a state law demands that property be assessed at its "full market value" or "fair cash value," such assessment would not necessarily be the sale price of a property. The

market value, in cash, at the place where the property to which the term is applied shall be at the time of assessment, being the price which could be obtained therefore at private sale, and not at forced auction or sale. Vernon's Texas Statutes (Kansas City, Mo.: Vernon Law Book Co., 1960).

⁹Robert F. Kilmer, "Full Value Assessments: The Legal View," Proceedings of Fifty-First Annual Conference on Taxation (Sacramento: National Tax Association, 1959), p. 414.

necessary requirement in fulfilling the definition is that "full market value" is that price at which the property should be sold, rather than its price per se.

The main purpose of any form of full value standard is to provide for the most equitable property tax apportionment among the various owners of property. As Kilmer points out: "The full value standard . . . is merely a means to an end, equality of treatment."¹⁰ The application of this standard is the principal source of legal difficulties in applying property tax laws.

Administrative Problems

Problems of the administration of the property tax are significant. One of these problems is that administrative laxity sometimes lessens tax equity. As Macy points out:

After a tax is established by statute, those who pay it ultimately have reason to expect that it will be administered in an effective manner. Past administration of the property tax, particularly with respect to assessment, has left much to be desired. There has been delay in placing some properties on assessment rolls, and others have been under-assessed. Certain segments of the economic order have been affected adversely as a consequence of lack of uniformity in assessment procedure. Unequal treatment of property owners has done much to weaken the basic foundation of the property tax and cause taxpayers to lose faith in administrators. In practice, the property tax has often been seriously regressive. Proportional rates that are levied on property may become sharply regressive in operation because of poor administration. This results in a miscarriage of justice in taxation.¹¹

¹⁰ Ibid., p. 415.

¹¹ C. Ward Macy, "The Theory and Practice of Central Assessment," Proceedings of the Forty-Ninth Annual Conference on Taxation (Sacramento: National Tax Association, 1957), p. 505.

Another problem concerning the property tax is the overlapping of assessment districts. Overlapping is the situation which arises where a county government, a city government, a state government and a school district all tax property in the same locale. Some arguments arise over the repetition of tax assessments. What should be the role and responsibility of the state and local officials in regard to appraisal and assessment? Those in favor of local administration state:

The property tax is now used almost exclusively for the support of local government, and it should be administered by local officials who are in intimate contact with the problems involved; aggressive action by the state in the property tax field tends to undermine institutions of local government in an area where home rule and local autonomy should prevail; the work involved in assessing all property by a central agency is beyond the capacity of a single office; and not necessarily desirable over a wide area where conditions are not uniform.¹²

The argument for the participation of a central authority covers the following points:

1. Local governmental units are creations of the state and are not autonomous in the field of taxation.
2. Constitutional and statutory requirements pertaining to uniformity cannot be met in the absence of state activity.
3. Some taxable properties, extending beyond the borders of a given local taxing district, should be assessed as a unit rather than in segments as is necessary when the task is handled locally.
4. The poor administrative record made in the past by local officials, whether due to improper organization, understaffing of assessors' offices, or incompetence provides pragmatic grounds for state action.¹³

Macy suggests that the function should not be designated to either the local or central authority exclusively. He contends that the major

¹²Ibid.

¹³Ibid.

part of the assessing and appraising function should be attended to by the local authority with the exception of those forms of property not exclusively local. Such properties as certain industries, public utilities, mines, and others should be the object of the central or state authority.

Another suggestion is that the existing law should be enforced by the state or central agency. This might be done through State Tax Boards among whose original functions was the supervision of local assessments. Such supervision could be accomplished by state agencies analyzing sales ratio analyses of the assessments made by local officials to ascertain whether these local assessors were following the law or not.

Theoretical Criticisms

Some criticisms are levied against the tax from a theoretical point of view; for example, the tax is accused of being a poor measure of benefits received.¹⁴ Does an expensive building receive more fire protection than an inexpensive residence? What dollar value can be placed upon the school systems to childless couples? Almost everyone benefits from expenditures of government in some way, but it is not possible to say that the property tax is a good index of that benefit.¹⁵

Another criticism of the tax is that it is a form of double taxation. Double taxation results when a property owner is taxed on the full value of his property at the same time that the mortgage holder

¹⁴Groves, p. 51.

¹⁵Ibid.

is taxed on the value of the mortgage (intangible property).

. . . property owners who are greatly in debt to others are taxed relatively heavily in relation to their true net worths as compared with owners with large equities in their property holdings.¹⁶

Evidence of double taxation leads to the conclusion that "A property tax, no matter how general its application, inherently discriminates against certain taxpayers and favors others."¹⁷

Another problem is that

. . . exemptions from property taxation have long been on the increase. Certain classes of property are not taxed at all. Properties of governments, charities, educational institutions and religious institutions are among those exempted.¹⁸

There is some disagreement on the choice of what properties should be exempt.

The property tax has limitations as a means of instrumenting an ability to pay basis of taxation because its coverage does not exhaust the usually accepted criteria of ability. In most jurisdictions, the property tax includes real property and some limited tangible and intangible property. However, stocks, securities and other intangibles are not significant revenue producers. Thus, payments under the tax are indications of relative taxpaying ability, but the tax is not related to ability in a one to one relationship. Normally, low income property owners pay less absolute amounts of tax than owners of high valued property owners. On the other hand, the tax amount is relatively higher for low income owners according to their ability to pay.

¹⁶Earl Rolph and George F. Break, Public Finance (New York: Ronald Press, 1961), p. 328.

¹⁷Ibid.

¹⁸Ibid.

Of the two principles of taxation, the property tax can more nearly be identified as following the benefit principle. The taxpayer pays taxes and receives services from the community. This follows the benefit principle because the taxpayer pays for and receives services. In closer examination, the taxpayers do not pay correspondingly for the services they receive. Police protection in many communities tends to be protection of business property. This is an example of a differentiation in services under the tax.

The property tax is generally considered a regressive tax. One form of regressivity may be due to assessment procedures. Assessors may assess low value properties at a higher ratio to sale price than high valued properties because wealthy citizens may be able to influence the assessor to make lower assessments on their properties.¹⁹

In spite of the difficulties of the property tax, there is little evidence to indicate a trend in Fort Worth towards other forms of taxation. Thus, it is appropriate that the setting for this study is a city in which the taxing authority is implicitly and explicitly handicapped by the legal definitions of full market value. It is further appropriate that this study be limited to one major part of the taxation process rather than to deal slightly with several related problems. Consideration of the appraising techniques by the city appraisers was chosen in order to explain the causes of the variation that exists between sale prices of properties and their assessed values for tax purposes.

¹⁹Groves, p. 57.

Studies in the Field of Property Taxation

Most of the large property taxation studies have been equalization studies carried on by the various state tax departments. Many states over the past ten years have conducted studies which attempted to set equalization ratios for their respective counties. One recent analysis of the tax structure of Texas was conducted by the Texas Legislative Council in 1952 to gather the basic tax data for a determination of the subsequent sales tax.²⁰

Some tax study has been done for planning purposes in cities such as Washington, D. C.; Flint, Michigan; and Bethlehem, Pennsylvania. With the exception of the Washington study, most of these were sales ratio analyses and did not deal with property taxation in much detail. Another group of studies has been conducted at the local level. Many local assessors use the sales-ratio method for evaluation of their appraisers' work, and these studies are made from the value information the assessor gathers.

Other property tax studies have been conducted by large business firms such as railroad, utility companies, and telephone companies. Bell Telephone in Fort Worth conducted a sales-ratio study of 250 residential properties sold in 1962 and 1963. This study revealed that the average appraised value of the properties sampled was 95 per cent of sale price. These studies are used commonly by companies to promote their own taxable situation in cities and states. Such studies are

²⁰State of Texas, Local Government: Part I, Setting and Primary Income Sources (Austin, Texas: Texas Legislative Council, 1952).

traded and used among corporations to compare local tax structures for future plant locations and other planning purposes.

One of the best studies of property taxation is in The Census of Governments compiled from 1960 census.²¹ It is a primary source of descriptive data on property taxation and other revenue sources of states.

An early study of ad valorem taxation in Fort Worth was conducted by the Bureau of Municipal Research at the University of Texas and published in 1941.²² This survey was made under the leadership of Dr. Stuart A. MacCorkle. Funds were provided and the data were collected by the Works Projects Administration covering sales of properties during the years 1936 to 1940. The purpose of the study was threefold; first, a description of the appraisal techniques then employed in the city; second, a comparison of sale prices with these techniques; and third, to show how the ad valorem tax was distributed among types of properties. In this older project no attempt was made to explain the variation between the sale prices and appraised values whereas in the present study, such exploration is the primary aim.

The Chamber of Commerce of Fort Worth published a study on industrial properties in 1954. This study determined that the ratio of assessed values to sale prices for the sample of properties chosen was 45.84 per cent of the sale price.

²¹U. S. Department of Commerce, Bureau of the Census, Property Tax Assessments in the United States (Washington: Government Printing Office, 1962).

²²Stuart A. MacCorkle, An Analysis of Ad Valorem Property Tax Bases in Fort Worth (Austin, Texas: The University of Texas Press, 1941).

Another study, conducted in Fort Worth in 1959 by Paul Hastings of the Texas Christian University Finance Department, was concerned with twenty-five industrial properties.²³ Hastings concluded that the ratio of appraised value to sale price of this group of properties was 27.95 per cent.

A Summary of Chapters

The organization of the chapters is based on isolating broad problem areas in the assessment of real property. Chapter II is concerned with the historical development of the property tax as a producer of revenues among various levels of government. As applied to Fort Worth specifically, the property tax is discussed, as it has applied to the city in recent years. Chapter III indicates the basic measures of the data in the aggregate. These measures of the data are taken before the data are studied further in the later chapters.

Chapter IV illustrates the effect of human judgment upon the assessments. Chapter V contains detailed information of the effect of changes over time on the appraisal results. Chapter VI is an exploration of the effect of use upon the assessed values. Chapter VII is a summary of the first six chapters and contains conclusions about the assessment of real property in Fort Worth.

²³Paul G. Hastings, "Tax Rates on Fort Worth Industrial Properties," Fort Worth Business Review, Vol. 7, No. 11 (March, 1959).

CHAPTER II

THE DEVELOPMENT OF THE PROPERTY TAX

The property tax is an old form of taxation. It has usually been a tax on land and the improvements to land.

Ancient History of Property Tax

The earliest known tax on land was the Athenian direct tax. As levied in the time of Solon (B.C. 596), it was not a classified property tax, but a land tax.¹ Some attempts were made to tax person-
alty; but the success of these attempts is not known. Under Nausinicus (B.C. 378), the basis of taxation was not only land and houses; but also slaves, cattle, furniture and money.²

Rome levied a direct tax which was a forced loan to be repaid out of the proceeds of conquest, and was levied only to meet unusual expenses for which the proceeds of domains were insufficient.³ The economy of Rome was agricultural therefore, taxable property consisted of land and the immediate possessions connected to the land, such as houses, slaves, and cattle. The property tax, however, was assessed

¹ Edwin A. Seligman, Essays in Taxation (New York: Macmillan Co., 1921), p. 34.

² Ibid.

³ Ibid., p. 35.

only on the land, on the assumption that every acre of land would require a definite quantity of productive capital.

Later, the amount of personalty was increased. To keep a general property tax, the Romans had to tax the newer forms of property.⁴ Farming implements, ships, carriages, money, garments, ornaments, etc., were listed as personalty that was taxable; the only personalty assessed consisted of tangible visible objects, even though the censors apparently had unlimited power to list any property on the tax roll. Collections were not successful and the tax reverted to a land tax. In conclusion, the Roman property tax was a tax on land and the productive capital affixed to land.⁵

In Syria around 2000 B.C., the land tax failed because "the privileged position of large land holders in ancient Syria caused city revenues to decline."⁶ At the same time there was a land tax in Egypt and Mesopotamia. In Egypt the church paid a land tax on its property. In ancient Mesopotamia, there was a land tax of wheat, oil, vinegar and honey.⁷ The property tax is an old form of taxation which typically evolved into a land tax in ancient civilizations.

Medieval History of the Property Tax

In the early portion of this period, after the disruption of the Roman empire, there were no taxes at all. Later, the public tax became

⁴Ibid.

⁵Ibid., p. 36.

⁶Daniel C. Dennett, Jr., Conversion and the Poll Tax in Early Islam (Cambridge: Harvard University Press, 1950), p. 53.

⁷Ibid., p. 79.

private property. The tax revenues originally devoted to public purposes became the private possessions of feudal nobles and overlords.⁸

The medieval town was the birthplace of modern taxation. The English towns paid their share of a tax to the crown in a lump sum but this lump sum was distributed among the townsmen in proportion to the property each citizen owned. During the reign of Henry II, the collectors collected from whom they chose. The first common use of tax rolls in England was under Richard I, while the first exemptions in England were made under Henry III. Military service exempted citizens from the property tax.⁹

The only distinction between England and the continent was that in England the property tax remained for centuries the sole local tax, while in France and Germany local excises were added.

The general state taxes followed the municipal taxes. In 1166, property taxes were levied throughout most of Europe in order to aid the crusaders.¹⁰ English statutes of this period mention in detail the various classes of taxable property. Lands and all movables including gold, silver, animals, coin, credits, the produce of vineyards, etc., were taxed and further provisions demanded that those who did not own as much as a pound should nevertheless pay a penny if they were either householders or in possession of some office.¹¹ In England from

⁸Seligman, p. 38.

⁹Ibid.

¹⁰Ibid., p. 40.

¹¹Ibid., p. 41.

this time on, grants on rents and movables became more and more common until they gradually replaced the older methods of tax revenue. The taxable portions of the property granted varied from a fortieth to a fourth; but from 1290, it became customary to tax the nobility and the clergy only two-thirds as much as the common.

In 1334, the proportion was fixed as the fifteenth and the tenth of the value. For all practical purposes, the fifteenth was a tax on rents or realty, the tenth on movables or personalty. One problem for the tax was that trading among businessmen of goods during the middle ages helped make personalty impossible to tax.¹² In Europe and in England, the same form of taxation existed under different names. The difference in the rates is explained by Seligman when he points out that it was more difficult to reach personal property, both because some of it was more or less hidden from the assessor, and because concealment was far easier.¹³

Thus, the general property tax existed throughout Europe. It seems to have been levied chiefly on tangible, physical objects not capable of easy concealment.

Modern History of the Property Tax

In England the fifteenths and tenths were changed from percentages to apportioned taxes and every town had to raise a definite sum,

¹²Summerfield Baldwin, Business in the Middle Ages (New York: Henry Holt Co., 1947), p. 32.

¹³Seligman, p. 45.

which remained the same from year to year. One fifteenth and tenth, therefore, meant a fixed sum, but when more was desired two or three fifteenths and tenths could be imposed. With the advent of this development, the old methods of assessment were altered so that each town and county made its own arrangement. Personal property was treated with such inconsistency that the total product of the tenth and the fifteenth continually diminished. This reduction in revenues resulted in attempts on the part of the kings to supplement the old tax by a new general property tax, called a subsidy.¹⁴

The subsidy went through precisely the same development as the fifteenth and the tenth; what at first was really a percentage tax was converted into an apportioned tax of a stated lump sum. No reassessment of the districts took place; each locality was supposed to pay the same sum year after year. Collectors of the subsidy were allowed to keep two pennies from every twenty shillings collected.¹⁵ Thus the subsidy became an unequal land tax and finally disappeared in 1663.¹⁶

Abuses of the system were explained by Sir William Petty when he wrote:

There have been, in our times, ways of levying an aliquet part of men's estate, as a fifth, and twentieth of their estates, real and personal, yea of their offices, faculties and imaginery estates, also, in and about which way may be so much fraud, collusion, oppression, and trouble, some purposely getting themselves taxed to gain more trust: other bribing to be taxed low,

¹⁴Ibid.

¹⁵R. H. Tawney and Eileen Power, Tudor Economic Documents in 3 Volumes (London: Longman-Green Co., 1953), Volume II.

¹⁶Ibid.

and it being impossible to check or examine or trace these collections by the print of any footsteps they leave (such as the hearths of chimneys are) that I have not patience to speak more against it: daring rather conclude without more ado, in the words of our comick to be naught year, exceeding naught, very abominable, and not good.¹⁷

Later, however, Petty expressed the opinion that "assessments upon personal estates, if given in as elsewhere upon oath, would bring that branch which of itself is most dark to a sufficient clearness."¹⁸

The early history of the property tax revealed that as soon as direct taxation became common it evolved into the more easily administered land tax. This land tax then developed into a general property tax based on ability to pay. As soon as the bulk of property became complex the various kinds of personalty escaped, until finally the general property tax completed the cycle and reverted to its original form of the real property tax. The general property tax as the chief source of revenue has been largely impossible in any complex social arrangement. The fact remains, however, that the property tax has been in existence for many centuries.

Evolution of the General Property Tax in the United States

During the Colonial period and the early years of the Republic, the property tax was a selective tax, imposed only on certain classes of property with a variety of valuations and tax rates for the different classes. In the nineteenth century states began adopting the principle

¹⁷Seligman, p. 47.

¹⁸Ibid.

that all property, unless exempt, must be included as a part of the tax base and taxed uniformly within each jurisdiction.¹⁹ By the time of the Civil War, the property tax had come into use in most states.

Even under its general label, the property tax was not applied to all property. The states exempted their own property and that of the counties, but with certain limited exceptions. Federal property has not been taxed by the state and local governments. Large classes of private property traditionally have been exempted. These include the property of educational, charitable, and religious institutions.

As in the case of Europe, difficulty of administering the all-inclusive general property tax brought transition to less uniformity and less universality, though the change was retarded in some states by constitutional restrictions. According to Bird, "Two general procedures have been followed in narrowing the scope of the general property tax--differential treatment of various classes of property and total or partial exemption of some classes of property."²⁰

Differential treatment has been gaining in some states by means of classifications under which the level of taxation in each area varied for different types of property. This variation has been accomplished in two ways: by variance in the tax rate for different classes of property, or by the use of a uniform rate with the requirement that the taxable valuations for different classes of property be set at varying percentages of value.²¹

¹⁹Frederick Lucien Bird, The General Property Tax: Findings of the 1957 Census of Governments (Chicago: Public Administration Service, 1960), p. 11.

²⁰Ibid.

²¹Ibid.

Most states have developed differential treatment of property by removing some classes of property from the rolls, and making them subject to special taxes under rates that were determined by state law rather than by the general property tax rates.

The other method of reducing the general property tax has been through full or partial exemptions from taxation of some types of property, either by law or by administrative practices that are in direct violation of existing tax laws. Over the years, states extended exemptions to kinds of property that invited evasion, or seemed better suited to other types of taxation. As of 1957, nineteen states exempted all or nearly all intangibles from both general and special property taxation. As Bird indicated:

The present day scope of the general property tax ranges legally from broad coverage of real property and tangible and intangible personal property in a few states, such as Illinois, to exemption in all classes except real property in Delaware, New York, and Pennsylvania.²²

The oldest taxes in the State of Texas were the poll tax and the property tax. Both came into being in the Republic in 1836. The property tax was the main support for the state from that period until the twenties when it gave way to other forms of taxation.²³ Although the dependence upon property taxation had diminished to 12 per cent of state revenues in 1946, the tax was still a contributor to revenues. In 1962, the property tax accounted for about 5 per cent of all tax revenues of the state government.

²²Ibid.

²³Lynn F. Anderson, The State Property Tax in Texas (Austin, Texas: The University of Texas, Bureau of Municipal Research, 1948), p. 1.

In the 254 counties in the state, there are 1,766 overlapping assessment districts which annually levy the state property tax.²⁴ Over the years, the number of these units increased. In 1930 these units gathered \$82 million in revenue. The depression diminished revenues, but after the war property tax revenues rose rapidly--as in 1951 when the revenues were some \$330 million. Currently, the property tax revenues amount to some \$355 million among the assessment districts in the state.

In Fort Worth, one of the home rule cities where taxation of property is permissible, the ad valorem tax has been the primary source of revenues. In 1925, the ad valorem taxes provided 81 per cent of the city's operating revenues whereas in 1938, these taxes supplied 90 per cent of the revenues.²⁵ The tax rate in 1925 was \$2.54 per \$100 assessed values based on a 55 per cent ratio whereas in 1938, the rate was \$2.85 per \$100 valuation and was based on a 66 2/3 per cent ratio of estimated values. In 1962, the property tax represented 45 per cent of the city's operating revenues (at the rate of \$3.19 per \$100 valuation based on a 55 per cent ratio of assessed values).

The Importance of the Property Tax

The property tax has been the largest source of revenue for local governments throughout the United States. In 1960 the tax

²⁴State of Texas, Local Government: Part I. Setting and Primary Income Sources (Austin, Texas: Texas Legislative Council, 1952), p. 80.

²⁵Stuart A. MacCorkle, An Analysis of Ad Valorem Property Tax Bases in Fort Worth (Austin, Texas: The University of Texas Press, 1941), p. 1.

accounted for a total of \$16 billion to local governments; in the United States this amount represented 87 per cent of all tax revenues gained by municipalities (Table 1). The tax has been rising, not as a percentage of revenues but in absolute amounts. It was suggested by the Census Bureau that about two-thirds of this increase was due to reassessment programs.²⁶ A good deal of this increased valuation came about as a result of expanded new construction.²⁷ The property tax has provided an even revenue for local governments in most years other than depressionary years.

The relative decline nationally of the property tax has been explained by Ward Macy as a result of:

1. The expansion of financial activities by the federal government supported by net income taxes.
2. The trend among states to rely heavily upon consumption taxes and to a lesser degree to depend upon income taxes as sources of revenue, with a gradual abandonment of property taxes for state purposes.
3. The use of sales and income taxes at the local level.
4. The significant growth of state and federal aid for local governments particularly state aids for schools.²⁸

In other words, although declining relatively, the property tax has been second to the income tax as a producer of revenues for all government units.

²⁶U. S. Department of Commerce, Bureau of the Census, Property Tax Assessments in the United States (Washington: Government Printing Office, 1962), p. 1.

²⁷Ibid.

²⁸C. Ward Macy, "The Theory and Practice of Central Assessment," Proceedings of the Forty-Ninth Annual Conference on Taxation (Sacramento: National Tax Association, 1957), p. 502.

TABLE 1
PROPERTY TAX REVENUES FOR STATE AND LOCAL GOVERNMENTS
ANNUALLY, 1952-1960

Fiscal Year	Amount		Per Cent of all Tax Revenues	
	State and Local Governments	Local Governments Only	State and Local Governments	Local Governments Only
	(Millions of Dollars)			
1952	8,652	8,232	44.8	87.5
1953	9,375	9,010	44.8	87.0
1954	9,967	9,577	45.2	87.2
1955	10,735	10,323	45.7	86.9
1956	11,749	11,282	44.6	87.8
1957	12,864	12,385	44.6	87.7
1958	14,047	13,514	46.2	87.4
1959	14,983	14,417	46.3	87.2
1960	16,405	15,798	45.4	87.4

Source: U. S. Bureau of the Census, Property Tax Assessments in the United States, Preliminary Report Number 4, GC-P4 (Washington: Government Printing Office, 1962).

In 1960, the property tax still accounted for 45 per cent of the combined tax revenues of state and local governments (Table 2). This proportion was lower than the 49 per cent in the first post-war year, 1946, and much lower than the 78 per cent in 1927 when the yield of the property tax was approaching its predepression peak.

The property tax has become unimportant as a source of revenue for most states. On the other hand, for local governments the property tax has been the dominant source of tax revenue.

The Use of the Property Tax

A review by Bird of variations among the states in the use of property tax in 1957 disclosed a wide variation of policy as to the role that the property tax occupied in the state-local tax structure. Revenues ranged from 70 per cent to 20 per cent of total tax revenue among the states.²⁹

According to Bird, the total of property tax revenues in the continental United States in 1957 amounted to \$75 per capita. This measure of the use of the tax, applied to the states, ranged from \$122 to \$20, with Rhode Island in the median position at \$76.³⁰

Massachusetts' property tax revenues of \$122 per capita were six times the figure for lowest ranking Alabama. New Jersey and California followed with \$113, and New York and Montana with \$110 and \$109, respectively. Connecticut and Kansas, at \$102, were the only other states with property tax revenues of \$100 or more per capita.

²⁹Bird, p. 7.

³⁰Ibid.

TABLE 2

STATE AND LOCAL REVENUE FROM ALL TAXES AND FROM PROPERTY TAXES, AND
PROPERTY TAXES AS A PER CENT OF TOTAL TAX REVENUE, CONTINENTAL
UNITED STATES, SELECTED YEARS, 1927-1960

Year	State and Local Tax Revenue		Local Tax Revenue		Property Taxes as a Per Cent of Total Tax Revenue	
	Total	Property Taxes	Total	Property Taxes	State	Local
	(billions of dollars)		(billions of dollars)			
1927	6.1	4.7	4.5	4.4	23.0	97.3
1934	5.9	4.1	3.9	3.8	13.8	96.7
1940	7.8	4.4	4.5	4.2	7.8	92.7
1946	10.1	5.0	5.2	4.7	5.0	91.9
1952	19.3	8.6	9.5	8.3	3.8	87.5
1954	22.0	10.0	11.0	9.6	3.5	87.2
1956	26.4	11.7	13.0	11.3	3.5	86.8
1958	30.4	14.0	15.5	13.5	3.0	87.4
1960	36.1	16.4	18.1	15.8	2.8	87.4

Source: U. S. Bureau of the Census, Property Tax Assessments in the United States, Preliminary Report Number 4, GC-P4 (Washington: Government Printing Office, 1962).

Twenty-seven states and the District of Columbia fell into a middle group as to property taxes per capita. The range was from Wyoming with \$98 per capita to the District of Columbia with \$50 per capita.

For the fourteen remaining states, property tax revenues per capita were between the \$47 in Oklahoma and Alabama, with \$20. In all of these latter states, the property tax held a relatively minor position in the state-local tax structure.³¹

Relation of Property Tax Revenue and Personal Income

To indicate a measure of the comparative property tax burden, a comparison of the relation of property tax revenue to personal income was made (Table 3). Property tax revenue in the continental United States in 1957 amounted to \$37.26 per \$1,000 of personal income. The rank among the states, however, was from \$61.60 in North Dakota to \$11.73 in Delaware. High taxes per capita lose some of their burden in states with relatively high personal incomes per capita.

The policy in some states of relegating property taxes to a secondary position in the state-local revenue structure was shown in the relation of property tax revenues to personal income. The low relationship of property tax income to personal income was found in most of the states in the lower range of per capita income.

The gross assessed value in the continental United States, as officially determined in 1961 for local general property taxation

³¹Ibid.

TABLE 3

PROPERTY TAX REVENUE PER \$1,000 OF PERSONAL INCOME
FOR THE 48 STATES AND DISTRICT OF COLUMBIA, 1957

State	Property Tax Revenue Per \$1,000 of Personal Income	State	Property Tax Revenue Per \$1,000 of Personal Income
North Dakota	\$61.60	Iowa	\$47.30
South Dakota	61.02	Vermont	46.60
Montana	58.17	New Jersey	45.02
Kansas	56.01	Maine	44.86
Nebraska	53.31	California	44.51
Massachusetts	51.95	Oregon	43.81
New Hampshire	51.34	New York	43.35
Minnesota	50.55	Arizona	42.70
Wisconsin	49.49	Utah	41.55
Wyoming	48.40	Michigan	38.56
Idaho	48.28	Indiana	38.50
Colorado	47.80	Rhode Island	38.23
Connecticut	36.38	Illinois	37.99
Texas	35.51	District of Columbia	25.26
Nevada	33.61	Georgia	25.20
Ohio	32.48	Tennessee	24.38
Mississippi	30.78	Virginia	24.23
Maryland	31.41	Arkansas	23.22
Florida	31.40	North Carolina	22.76
Missouri	29.76	Louisiana	22.59
Oklahoma	28.54	New Mexico	21.41
Kentucky	28.28	South Carolina	20.23
Washington	26.27	West Virginia	18.19
Pennsylvania	25.42	Alabama	15.50
		Delaware	11.73

Source: Frederick Lucien Bird, The General Property Tax: Findings of the 1957 Census of Governments (Chicago: Public Administration Service, 1960), p. 9.

totaled \$355.7 billion (Table 4). This total included \$27.8 billion assessed by state agencies and \$327.9 billion assessed locally in the nation's thousands of assessing districts. The gross figure of \$355.7 billion represented the total of officially reported assessed valuations of the 50 states and the District of Columbia. It did not include properties wholly exempted from property taxation, nor did it include kinds of property subject to special forms of property taxation. The general property tax had become mainly a real property tax as was evident by the fact that locally assessed real property alone constituted more than three-fourths of the total, or \$271.3 billion.

The total of officially assessed values represented only a fraction of the then current market value of all taxable property, because of the practice of assessing property for tax purposes at less than full value. Disparity between assessed value and full market value was indicated by the fact that the 1956 assessed valuation of locally assessed real property in the United States was only \$1,200 per capita and that of locally assessed personal property was only \$280 per capita.

The 1957 Census of Governments conducted a nationwide survey of the relation of assessed values to sale prices of locally assessed real property sold in a six-month period in 1956. This study made an estimate of value possible of all locally assessed real property for that year. The survey indicated a level of about 30 per cent of sale price for the national average.

TABLE 4

AMOUNT OF NET ASSESSED VALUATION OF TAXABLE PROPERTY,
CONTINENTAL UNITED STATES, 1961, BY MAJOR CLASSES

Class of Property	Amount (Billions of Dollars)	Per Cent
State-assessed value, total	27.8	7.8
Railroads	5.9	1.7
Other public utilities	18.8	5.3
All other state-assessed property	3.1	0.9
Locally assessed value, total	327.9	92.2
Real property	271.3	76.3
Personal Property	56.6	15.9
ASSESSED VALUE SUBJECT TO TAXATION, TOTAL	355.7	100.0

Source: U.S. Bureau of the Census, Taxable Property Values in the United States, 1962 (Washington: Government Printing Office, 1962), GC-P4.

The Pattern of Development of Fort Worth

The development of the City of Fort Worth covered roughly the last one hundred years. The character of that development was one of gradual diversification of economic activity over time.

The origin of the city lay in the establishment of a military outpost to protect settlers moving west during the 1850's. The buildings constructed for the Fort were inhabited by nearby settlers when the military moved farther west, and by 1860 about two hundred persons lived around the present City of Fort Worth.³² Fort Worth remained a frontier community until it was incorporated in 1873.

As early as 1856 there were regular stage coach routes through the community; and as early as 1858, the leading citizens of the city desired their community to have a railroad. This desire was interrupted by the Civil War but by 1873, track was laid to within 24 miles of the town.³³ Another setback occurred in the Panic of 1873 when the national disturbance had repercussions in Fort Worth. The population of the community dropped from 3,000 to about 600 during that year.³⁴ It was not until three years later that the Texas and Pacific Railroad built a terminus at Fort Worth.

During the time that Fort Worth developed its interest in railroading, the city was designated the county seat of Tarrant County. The naming of Fort Worth as county seat was determined by a local election

³²Robert H. Talbert, Cowtown Metropolis (Fort Worth, Texas: Leo Potishman Foundation, Texas Christian University, 1956), p. 1.

³³Ibid., p. 2.

³⁴Ibid.

under an act of the state legislature. By a slim majority of votes, Fort Worth became the county seat. Success came partially from the bountiful supply of "free whiskey" which the citizens provided county residents. The competing community, Birdville, lost in the election because the citizens of Fort Worth stole its cache of "free whiskey."³⁵

With the establishment of the county seat and the railroad came additional impetus to growth of the community. The decade of the 1860's saw the city become a stopping place for cattle drives during the thriving years of the range cattle industry. After 1870, the city became the center of supply for the West Texas cattle industry.³⁶

The next major phase in the economic development of the community came with the establishment of the meat packing industry in the city. Swift and Armour both were looking for cities in Texas in which to establish packing houses and Fort Worth's citizens paid a bonus to the two companies of \$100,000.³⁷ By 1905, Fort Worth was firmly established as the leading meat packing city in the Southwest.

Growth between the various stages was sometimes slow for the community and population grew in spurts. Population figures for 1900 indicated that the community had 26,000 persons but by 1910 the population had jumped to 73,000.³⁸ After 1910, a further stimulation to growth came with the development of the West Texas oil fields. Refineries were established in the city during the decade of 1910 to 1920

³⁵Ibid., p. 25.

³⁶Ibid., p. 27.

³⁷Ibid., p. 34.

³⁸Ibid., p. 116.

and were important in the growth of population and the diversification of the city's economic base.

Partially due to the oil industry, Fort Worth prospered during the twenties and claimed to be the leading oil pipe line center in the United States with West Texas oil coming to the Fort Worth refineries. Aside from the oil and the growth of meat packing houses, a third major element entered into the economic picture in the form of milling of flour and feed products.³⁹

The next period of major development came to the community in 1942 with the establishment of Carswell Air Force Base and the Consolidated-Vultee Convair plant.⁴⁰ During the forties and fifties, aircraft became the major industry of the community. From 1940 to 1950, the population of the city grew from 177,000 to 278,000.

Diversification continued with the location of the General Motors plant in Arlington and the recent acquisition of the Carling Brewery. Over the recent span of time, Fort Worth has become increasingly industrialized and diversified.

The Present Population and Economy of Fort Worth

Fort Worth saw a tremendous growth in population in recent years. As a metropolitan area, the population of Fort Worth increased 28 per cent during the 1950 to 1960 decade and the area surrounding the older center of the city declined in population by about 40 per cent for the

³⁹Ibid., p. 38

⁴⁰Ibid., p. 41.

same period.⁴¹ The bulk of the growth took place in the urban areas which were annexed and built during the decade of the fifties. Many middle income families moved out of the central core of the city. The growth rate in the suburbs of Fort Worth was the third highest of the four principal cities in Texas (Table 5).

In 1961 the median family income was \$5,742 before taxes.⁴² Percentages of the distribution of income within the community show that 18.5 per cent of the families earned under \$3,000 a year in income while 14.5 per cent of the families earned \$10,000 a year or more. Low income figures were further illustrated when it was noted that 11.5 per cent of the population in the community is nonwhite.⁴³ There were 356,268 citizens in the community as of 1960. Within this group were 132,308 families.

In 1960, the labor force of the community included 196,777 persons, of whom 66.7 per cent were male.⁴⁴ The bulk of the citizens worked in manufacturing, 34,329 in durable goods, and 15,907 in non-durable goods.⁴⁵ The second category in size was the wholesale and retail trades category which employed 39,634.⁴⁶ Education as an occupational class ran slightly larger than the combined group of finance,

⁴¹Robert H. Talbert, "The Fort Worth Central Business District," Fort Worth Business Review, Vol. 10, No. 6 (November, 1961), p. 6.

⁴²U. S. Department of Commerce, Bureau of the Census, County City Data Book (Washington: Government Printing Office, 1962), p. 456.

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Ibid.

⁴⁶Ibid.

TABLE 5
INCREASES OF POPULATION IN THE AREAS WITHIN THE COUNTY AND
OUTSIDE THE CENTRAL CITY FOR FOUR TEXAS CITIES,
BETWEEN 1950 AND 1960

Item	Fort Worth	Dallas	Houston	San Antonio
Increase in number outside central city, 1950-1960	99,752	91,506	103,401	7,415
Per cent change:				
County	49.1	54.8	54.1	37.3
Outside central city	120.9	50.7	51.3	8.1

Source: U.S. Bureau of the Census, U. S. Census of Population,
Number of Inhabitants - Texas, November, 1961, p. 6.

insurance and real estate, while public administration was slightly higher than the preceding two. In all, 50 per cent of all the jobs in the community were white collar jobs.

Nonagricultural unemployment within the community in 1961 ran close to national figures of around 4 per cent, while another indicator, bank debits, was about 110 per cent of the 1957 level. Other economic indicators tended to show a flattening out over the past five years in the economic level of the city.⁴⁷

The community for many years has been a wholesale trade center for a large portion of West Texas, but the growth of cities further west indicated that this was not a continuing situation. One possible hope for the future of the city has been the Trinity Canal which would open a waterway from Fort Worth to the Gulf. The only problem is that it is a long run program. In the meantime, the economy of the community had a lift in the awarding of the TFX fighter plane contract to General Dynamics in Fort Worth.

The Government of the City

The government of the community has been based on a city manager system and a city council of nine persons elected at large. In 1961, the annual salary for the City Manager was \$22,500 and for the councilmen, \$520 per year.

The total revenue to the city in 1961 was \$31 million (Table 6). The large sources of revenues to the city came in the form of general revenues. Of the \$31 million in revenue to the city, property taxation

⁴⁷Fort Worth Business Review, Vol. 10, No. 6 (November, 1961).

TABLE 6

REVENUES FOR THE CITY OF FORT WORTH, TEXAS, FOR THE FISCAL YEAR
ENDING SEPTEMBER 30, 1961

Item	Revenue (Millions of Dollars)
Revenue Total	31.0
General	23.4
Taxes	15.7
Property	14.0
Sales & Receipts	0.8
Other Tax and License	0.5
Intergovernment Revenue	0.4
From State Government	0.02
Miscellaneous General Revenue	7.7
Current Charges	5.5
Special Assessments	0.5
Other	1.7
Utility Revenue	6.3
Water Systems	6.3
Employee Retirement	1.3
Expenditure Total	52.0
General Expenditure	26.0
Capital Outlay	7.9
Other	18.1

Source: U.S. Department of Commerce, Compendium of Local Finance,
1962.

in 1961 accounted for \$14 million in revenues. This figure for 1961 represented that proportion of taxation which fell on property within the city.

For 1962, the assessed value of all of this property was \$908 million, of which \$693 million was real property. Property assessed values for that year compared to \$499 million for 1957 and \$344 million for 1952. It could be expected that this valuation of real property would continue to increase because the reappraisal program in the city begun in 1961 reported the assessed value at 100 per cent of what they estimated market value to be rather than the 55 per cent of market value reported in earlier years. Of the 145,000 properties in the community, about two-thirds were residential housing; the remaining one-third was distributed among commercial, industrial, and a large number of other properties which included churches, public property, etc.

Housing in Fort Worth

The Census of Housing for 1960 indicated that there were 170,000 housing units in the city. The term unit refers to a unit of housing whether it be a single house or an apartment. Of the 170,000 units in the community, 144,000 or 85 per cent were judged to be sound. Units which were considered deteriorating numbered 19,000, or 11 per cent of the total. Dilapidated housing units made up 3.7 per cent of the total, or 6,000.⁴⁸ Among the housing units, about 3,000 did not

⁴⁸U. S. Department of Commerce, Bureau of the Census, Census of Housing (Washington: Government Printing Office, 1962), pp. 45-46.

have facilities for bathing and 1,400 had no toilet.⁴⁹

In the 1960 Census of Housing, owner occupants were asked to place a value on their homes if they were placed on the market. If they were already on sale, the owner was asked to give the asking price (Table 7). Sixty-four per cent of the residential properties were valued at less than \$10,000. This figure, of course, referred to owner occupied housing. At the other end of the distribution, 6.5 per cent of the homes were valued at greater than \$20,000. The median value of these properties was \$9,000.

Units which were not owner occupied numbered 46,933.⁵⁰ Among this group, the median rent was \$66 per month. Further information from the census indicated that 12,415 units were vacant on the average the year round, representing a vacancy rate of 7.4 per cent of the total housing units.

⁴⁹Ibid.

⁵⁰County City Data Book, p. 459.

TABLE 7

VALUE OF OWNER OCCUPIED HOUSING FOR 69,335 UNITS
IN THE CITY OF FORT WORTH, TEXAS, IN 1960

Value	Number of Properties	Per Cent
Less than \$5,000	11,344	16.4
\$ 5,000 - 7,499	17,112	24.7
7,500 - 9,999	15,734	22.7
10,000 - 12,499	8,625	12.4
12,500 - 14,999	5,602	8.1
15,000 - 17,499	4,041	5.8
17,500 - 19,999	2,319	3.4
20,000 - 24,999	1,907	2.8
25,000 - 34,999	1,604	2.3
35,000 or more	984	1.4
Total	69,335	100.0

Source: U. S. Department of Commerce, Census of Population, 1960, States and Small Areas, Final Report (Washington: Government Printing Office, 1963), Table 17, pp. 45-81.

CHAPTER III

DESCRIPTION AND MEASUREMENT OF THE BASIC CHARACTERISTICS OF THE SAMPLE DATA

The basic characteristics of properties in the sample are quite complex. In order to grasp the analysis presented in this and succeeding chapters, these characteristics will be described. The first portion of this chapter covers the composition of the sale prices of the properties while the second portion describes the assessment data. The last two segments of the chapter are analytical in nature.

The Composition of the Sales

Seventy-seven per cent of all properties in the sample of 660 sold for between \$5,000 to \$20,000 (Table 8). Forty per cent of the properties sold for \$10,000 or less, whereas 67 per cent of the properties sold for less than \$15,000. Most of the properties sold for prices below the arithmetic mean.¹

¹Computed from ungrouped data, the mean of the sale prices for these properties was \$14,784. Although the ten most highly priced properties represented only 1.4 per cent of the sample, the mean was biased by the price of these properties.

The median of the sale prices was \$14,000, whereas the mode had a value of \$7,500. The discrepancy among the mean, median, and mode (all from ungrouped data) bear some identification; the median compared favorably with the arithmetic mean of the sales prices, whereas the mode fell far below either of the other two figures. Although \$7,500 as a price was the most frequent appearing single item, houses were

TABLE 8
 SALE PRICES OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Sale Price	Number of Properties	Per Cent	Cumulative Per Cent
\$ 0 - 5,000	43	6.5	6.5
5,001 - 10,000	225	34.1	40.6
10,001 - 15,000	175	26.5	67.1
15,001 - 20,000	110	16.7	83.8
20,001 - 25,000	36	5.4	89.2
25,001 - 30,000	29	4.4	93.6
30,001 - 40,000	22	3.3	96.9
40,001 - 60,000	10	1.5	98.4
60,001 - 80,000	2	0.3	98.7
80,001 - 100,000	5	0.8	99.5
100,001 & above	3	0.5	100.0
Total	<u>660</u>	<u>100.0</u>	<u> </u>

Source: Compiled from sample data.

When considered separately, the largest number of houses sold for prices between \$5,000 and \$20,000 (Table 9). Eighty-two per cent of the houses in the sample fell into this range. There were no houses which sold for more than \$60,000.

When commercial properties were separated from the total, 53 per cent sold within the \$5,000 to \$20,000 price range (Table 10). A wider variation was present in sale prices of commercial properties than in sale prices of the residential properties. This variation was demonstrated by the number of commercial properties with prices above \$20,000 (32 per cent of the 110 commercial properties).

Sales among Brokers

The smallest number of sales by a single broker was one and the largest number was 52 (Table 11). The name of the broker was not available in the case of 130 properties. These were either private sales of residential property or sales of commercial properties which were made without the use of a real estate broker. Of the brokers listed by number, 53 were members of the Multiple Listing Service, and

usually priced in even amounts. The largest number of houses with similar sales prices fell at the \$7,500 point, but the price levels of \$8,750, \$10,000, \$13,000, and \$14,000 had large clusters in the order stated. Therefore, the mode, though technically accurate, was not a descriptive measure of central tendency.

When the arithmetic mean was computed for all properties, except the high extremes, the result was \$13,674. Thus the influence of the extremes was noted.

Positive skewness was in evidence in the sample. In computing the coefficient of skewness, the result was 0.42. The standard deviation of sales prices had a value of \$5,549, but the extreme values so exaggerated the standard deviation that it was not considered descriptive enough to use. Use of the cumulative tables served the purpose of revealing relative percentages among groups.

TABLE 9
 SALE PRICES OF 550 RESIDENTIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Sale Price	Number of Properties	Per Cent
\$ 0 - 5,000	27	4.9
5,001 - 10,000	196	35.6
10,001 - 15,000	157	28.6
15,001 - 20,000	98	17.8
20,001 - 25,000	29	5.3
25,001 - 30,000	24	4.4
30,001 - 40,000	15	2.7
40,001 - 60,000	4	.7
60,001 - 80,000	0	0
80,001 - 100,000	0	0
100,001 & above	0	0
Total	550	100.0

Source: Compiled from sample data.

TABLE 10
 SALE PRICES OF 110 COMMERCIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Sale Price	Number of Properties	Per Cent
\$ 0 - 5,000	16	14.5
5,000 - 10,000	29	26.4
10,001 - 15,000	18	16.4
15,001 - 20,000	12	10.9
20,001 - 25,000	7	6.4
25,001 - 30,000	5	4.5
30,001 - 40,000	7	6.4
40,001 - 60,000	6	5.5
60,001 - 80,000	2	1.8
80,001 - 100,000	5	4.5
100,001 & above	3	2.7
Total	110	100.0

Source: Compiled from sample data.

TABLE 11

NUMBER OF SALES OF RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY SELLING BROKER, 1958-1963

Broker's Number	Number of Sales	Per Cent of Sales	Broker's Number	Number of Sales	Per Cent of Sales
1	9	1.3	32	5	0.7
2	3	0.4	33	3	0.4
3	1	0.1	34	3	0.4
4	12	1.8	35	3	0.4
5	33	5.0	36	18	2.7
6	11	1.6	37	3	0.4
7	43	6.5	38	5	0.7
8	9	1.3	39	6	0.9
9	27	4.0	40	2	0.3
10	1	0.1	41	22	3.3
11	3	0.4	42	2	0.3
12	4	0.6	43	5	0.7
13	0	0.0	44	47	7.1
14	7	1.0	45	5	5.7
15	7	1.0	46	3	0.4
16	7	1.0	47	7	1.0
17	20	3.0	48	1	0.1
18	13	1.9	49	1	0.1
19	3	0.4	50	2	0.3
20	12	1.8	51	3	0.4
21	13	1.9	52	1	0.1
22	2	0.3	53	3	0.4
23	11	1.6	54	2	0.3
24	41	6.2	55	1	0.1
25	4	0.6	56	6	0.9
26	1	0.1	57	1	0.1
27	5	0.7	58	4	0.6
28	25	3.7	59	3	0.4
29	3	0.4	60	3	0.4
30	6	0.9	61	2	0.3
31	52	7.8	No Broker	130	19.6

Source: Compiled from sample data.

all 61 were members of the Fort Worth Real Estate Board. Fifty-five per cent of the real properties in the sample were sold by ten of these brokers.² Some of the firms were quite large. One, for example, employed 25 associate members.

Location of Properties Sold

Sales of properties were most active in certain additions (Table 12). The largest additions were distinguished by the number of properties sold in these additions. The sample revealed that Fort Worth was made up of a few very large additions and a great many additions that were as small as a single square block.

The largest number of commercial properties from a single addition came from the Old City addition (number 22), representing 5.9 per cent of the total. The Old City addition was the original plan of the City of Fort Worth and the downtown section of the city.

The largest grouping of residential sales in a single addition was from the Western Hills addition, number 154, where thirty-seven properties were sold representing 5.6 per cent of the total sample. Number 126, where thirty-six properties were sold, was the South Hills addition, a large addition in the southern section of Fort Worth. Considerable sales activity also took place in the Westcliff addition (number 158). This addition was large and relatively new.

²With ten brokers in the community who sold such a large percentage of the properties, it was possible (assuming that the sample was representative) that brokers in Fort Worth could exert some control over prices of housing within the city. It was not known whether this actually took place in Fort Worth.

TABLE 12

SALES OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES IN
FORT WORTH, TEXAS, 1958-1963, BY ADDITION

Addition Number	Number of Sales	Per Cent of Total Sales	Addition Number	Number of Sales	Per Cent of Total Sales
1	1	0.1	41	1	0.1
2	19	2.8	42	1	0.1
3	4	0.6	43	0	0.0
4	1	0.1	44	9	1.3
5	1	0.1	45	10	1.5
6	2	0.3	46	1	0.1
7	1	0.1	47	0	0.0
8	12	1.8	48	1	0.1
9	1	0.1	49	3	0.4
10	8	1.2	50	4	0.6
11	12	1.8	51	4	0.6
12	1	0.1	52	1	0.1
13	1	0.1	53	1	0.1
14	1	0.1	54	4	0.6
15	1	0.1	55	3	0.4
16	0	0.0	56	0	0.0
17	2	0.3	57	2	0.3
18	0	0.0	58	0	0.0
19	2	0.3	59	1	0.1
20	1	0.1	60	1	0.1
21	1	0.1	61	1	0.1
22	39	5.9	62	4	0.6
23	5	0.7	63	1	0.1
24	3	0.4	64	5	0.7
25	3	0.4	65	4	0.6
26	1	0.1	66	3	0.4
27	1	0.1	67	1	0.1
28	3	0.4	68	1	0.1
29	4	0.6	69	0	0.0
30	0	0.0	70	0	0.0
31	9	1.3	71	0	0.0
32	1	0.1	72	1	0.1
33	1	0.1	73	9	1.3
34	3	0.4	74	1	0.1
35	3	0.4	75	5	0.7
36	0	0.0	76	5	0.7
37	1	0.1	77	1	0.1
38	0	0.0	78	2	0.3
39	1	0.1	79	1	0.1
40	1	0.1	80	7	1.0

TABLE 12, continued

Addition Number	Number of Sales	Per Cent of Total Sales	Addition Number	Number of Sales	Per Cent of Total Sales
81	0	0.0	121	0	0.0
82	8	1.2	122	0	0.0
83	0	0.0	123	0	0.0
84	2	0.3	124	1	0.1
85	1	0.1	125	7	1.0
86	2	0.3	126	36	5.4
87	1	0.1	127	2	0.3
88	3	0.4	128	1	0.1
89	3	0.4	129	1	0.1
90	5	0.7	130	1	0.1
91	1	0.1	131	2	0.3
92	1	0.1	132	1	0.1
93	5	0.7	133	0	0.0
94	1	0.1	134	1	0.1
95	7	1.0	135	9	1.3
96	1	0.1	136	4	0.6
97	20	3.0	137	8	1.2
98	14	2.0	138	2	0.3
99	3	0.4	139	2	0.3
100	4	0.6	140	1	0.1
101	1	0.1	141	0	0.1
102	1	0.1	142	2	0.3
103	3	0.4	143	2	0.3
104	0	0.0	144	1	0.1
105	5	0.7	145	0	0.0
106	3	0.4	146	1	0.1
107	9	1.3	147	4	0.6
108	6	0.9	148	1	0.1
109	10	1.5	149	2	0.3
110	1	0.1	150	1	0.1
111	1	0.1	151	1	0.1
112	0	0.0	152	1	0.1
113	1	0.1	153	2	0.3
114	6	0.9	154	37	5.6
115	3	0.4	155	1	0.1
116	2	0.3	156	5	0.7
117	2	0.3	157	2	0.3
118	0	0.0	158	28	4.2
119	2	0.3	159	6	0.9
120	3	0.4	160	12	1.8

TABLE 12, continued

Addition Number	Number of Sales	Per Cent of Total Sales	Addition Number	Number of Sales	Per Cent of Total Sales
161	0	0.0	181	7	1.0
162	2	0.3	182	0	0.0
163	2	0.3	183	0	0.0
164	2	0.3	184	1	0.1
165	2	0.3	185	1	0.1
166	5	0.7	186	1	0.1
167	1	0.1	187	0	0.0
168	1	0.1	188	1	0.1
169	0	0.0	189	1	0.1
170	2	0.3	190	2	0.3
171	0	0.0	191	3	0.4
172	3	0.4	192	3	0.4
173	1	0.1	193	3	0.4
174	1	0.1	194	2	0.3
175	1	0.1	195	1	0.1
176	0	0.1	196	1	0.1
177	0	0.0	197	1	0.1
178	0	0.0	198	1	0.1
179	1	0.1	Unknown	28	4.2
180	0	0.0			

Source: Compiled from sample data.

The statistical dot map illustrated how the sample of sales was dispersed over the entire city (Figure II). Where density occurred, as in the case of the center of town, it represented a large number of commercial sales. In the southwestern section of the city a large number of sales were attributed to new residential building.

Physical Description of the Properties

Most of the structures in the sample were wooden frame buildings; these represented 75 per cent of the total sample (Table 13). Some of the 495 wooden structures had a veneer of brick. The basic structure, nevertheless, was wood. Masonry buildings numbered 19 per cent of the total, whereas concrete buildings represented 0.7 per cent of the sample. Steel buildings were infrequent among the residential and commercial structures. The type of construction of thirty-two of the structures was not readily determined, indicating the existence of a vacant lot or that the information was not ascertainable from the tax card in the city assessor's office.

The tax office judged 451 of the properties (68 per cent) to be in good condition (Table 14). Fifty-three of the buildings were in fair condition. Properties in poor condition numbered ninety-six, whereas thirty-two buildings were in obsolete condition. The condition of twenty-eight of the properties was not indicated on the tax card.

Forty-one of the commercial properties were in good condition, representing 37 per cent of the total 110; on the other hand, seventeen of the properties were in fair condition (Table 15). Of primary importance was the fact that 39 per cent of the commercial properties were in poor or obsolete condition.

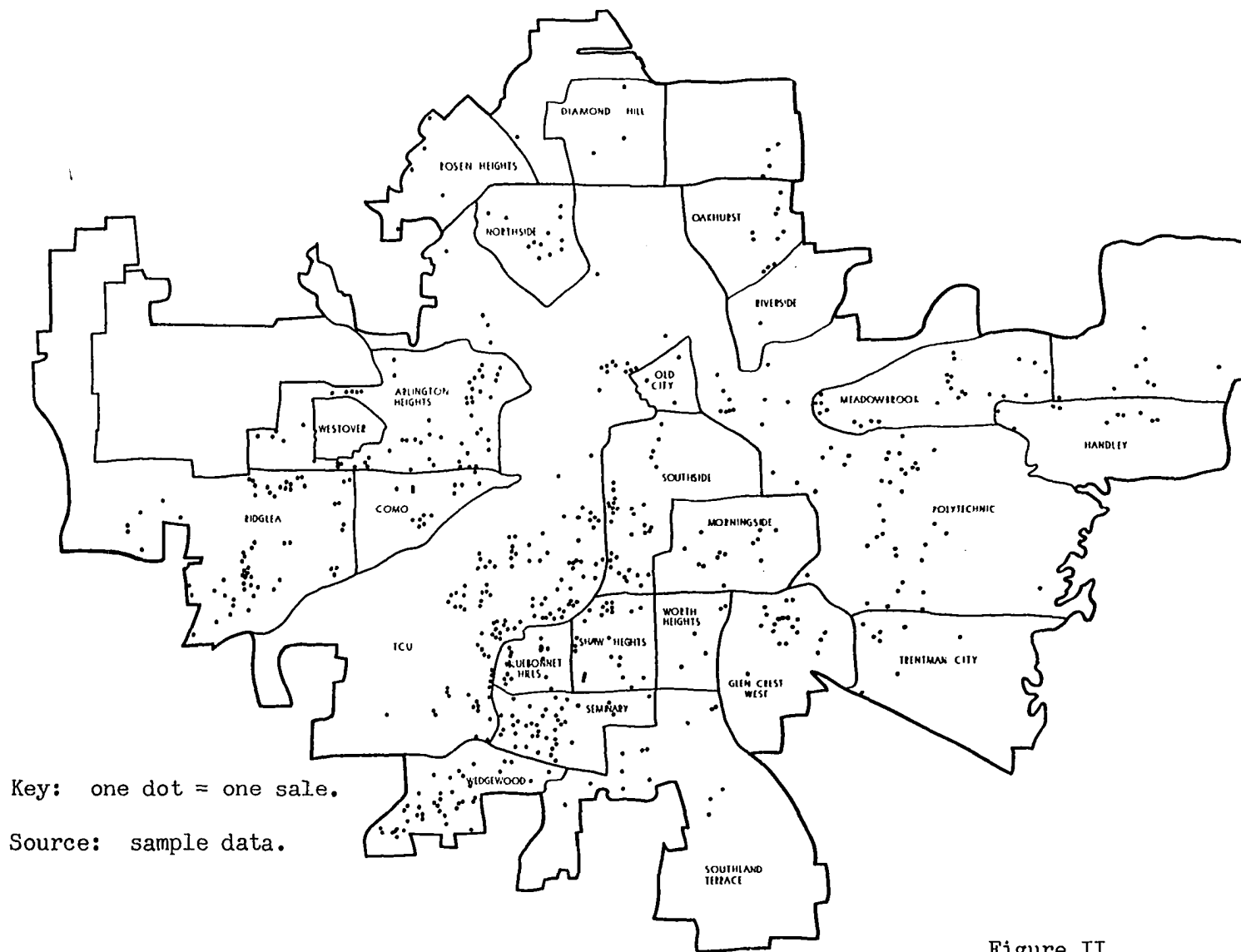


Figure II

THE LOCATION OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES SOLD IN FORT WORTH, TEXAS, 1958-1963

TABLE 13
TYPE OF STRUCTURE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Type of Structure	Number	Per Cent
Wood	495	75.0
Brick	127	19.2
Concrete	5	0.8
Steel	1	0.1
Not reported	<u>32</u>	<u>4.9</u>
Total	660	100.0

Source: Compiled from sample data.

TABLE 14
CONDITION OF STRUCTURES OF 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963

Condition	Number of Structures	Per Cent
Good	451	68.5
Fair	53	8.0
Poor	96	14.5
Obsolete	32	4.8
Not Reported	28	4.2
Total	660	100.0

Source: Compiled from sample data.

TABLE 15
 CONDITION OF STRUCTURES OF 110 COMMERCIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Condition	Number of Structures	Per Cent	Cumulative Per Cent
Good	41	37.2	37.2
Fair	17	15.4	52.6
Poor	22	20.0	72.6
Obsolete	21	19.0	91.6
Not Reported	9	8.4	100.0
Total	110	100.0	

Source: Compiled from sample data.

Seventy-four per cent of the residential properties were in good condition (Table 16). Eight per cent were in fair condition while 15 per cent were in poor or obsolete condition. Residential properties appeared to be in better condition than commercial properties.

The Age of Properties

While the commercial portion of the city was somewhat old, many of the residential areas were rather new (Table 17). Nine per cent of all structures in the sample were built before 1920, but a large amount of building took place since 1940 (70 per cent of the properties in the sample). In driving around the city, it was obvious that many of the less expensive new houses were already in a blighted condition.

The decline of building during depression years may be reflected in the small number of structures built in the decade of the thirties. In the array from which Table 17 was designed, there were no properties built in 1933 and 1934. Few properties appeared in the array for the years 1944 and 1945, two war years. As of 1963, the latest boom in construction in Fort Worth was during the decade of the fifties.

Over time, there has been a declining level of commercial building in the downtown area and an increasing level of residential construction in other areas of the city. The index of building activity compiled by the Texas Christian University Bureau of Business Research corresponded closely to the information in Table 17.³

³The index of building permits in the City of Fort Worth for 1963 was based on the year 1957 which was a high year in building. Between 1957 and 1963 the index of permits flattened out to an average of 30 per cent less than the base year amount. Fort Worth Business Review, Vol. 10, No. 6 (November, 1961).

TABLE 16
CONDITION OF STRUCTURES OF 550 RESIDENTIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Condition	Number of Structures	Per Cent
Good	409	74.3
Fair	43	7.8
Poor	74	13.4
Obsolete	11	2.0
Not Reported	13	2.5
Total	550	100.0

Source: Compiled from sample data.

TABLE 17

YEAR OF CONSTRUCTION OF IMPROVEMENTS FOR 660 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS

Year of Construction	Number of Properties
1895 - 1899	4
1900 - 1909	30
1910 - 1919	25
1920 - 1929	74
1930 - 1939	47
1940 - 1949	149
1950 - 1959	288
1960 - 1963	15
Unknown	28
Total	660

Source: City of Fort Worth, Texas Assessor's Office.

The Composition of Assessments

The total valuation of the largest number of properties of a particular assessed value category fell in the \$5,001 to \$10,000 class (Table 18). Two hundred and twenty-eight properties of the 660 were valued within that range. Broadly, of the 660 properties, 89 per cent of them were valued at \$20,000 or less; and 79 per cent of the properties had a tax valuation of \$15,000 or less.

While 89 per cent of the properties were valued at less than \$20,000, 84 per cent of the properties sold for prices of \$20,000 or less. Comparable variation existed in each category throughout the distribution of total valuation and sale price (Figure III). Throughout the distribution, total assessed valuation was usually less than comparable sale price.⁴

⁴The mean assessed value of these 660 residential and commercial properties was \$11,424, whereas the mode resulted in a most frequent value of \$3,080. The mode, though technically accurate, was so low that it was not really representative. The median was \$8,320. The median value of owner-occupied homes was \$9,000 in 1960. (See page 43.) Just as in the case of the sales data, the mean was much affected by the extremes, although to a lesser degree relatively than the mean of the sales data. The location of the median and the location of the mode relative to the median indicated that skewness was in this instance quite in evidence again, skewed positively to the right.

When the coefficient of skewness was computed for the total assessed values, the result was 2.35, as compared with the sales data figure of 0.42. This indicated that there was more skewness in the assessment data than in the sales data. The standard deviation of the assessed values was computed as \$3,606.

When the coefficients of variation for the sale prices and the assessed values were computed, the sale price coefficient was 37.5 per cent, whereas the coefficient of variation for total valuation was 31.6 per cent. This difference indicated that there was relatively more dispersion in the sales data than in the tax data for the same 660 properties.

TABLE 18

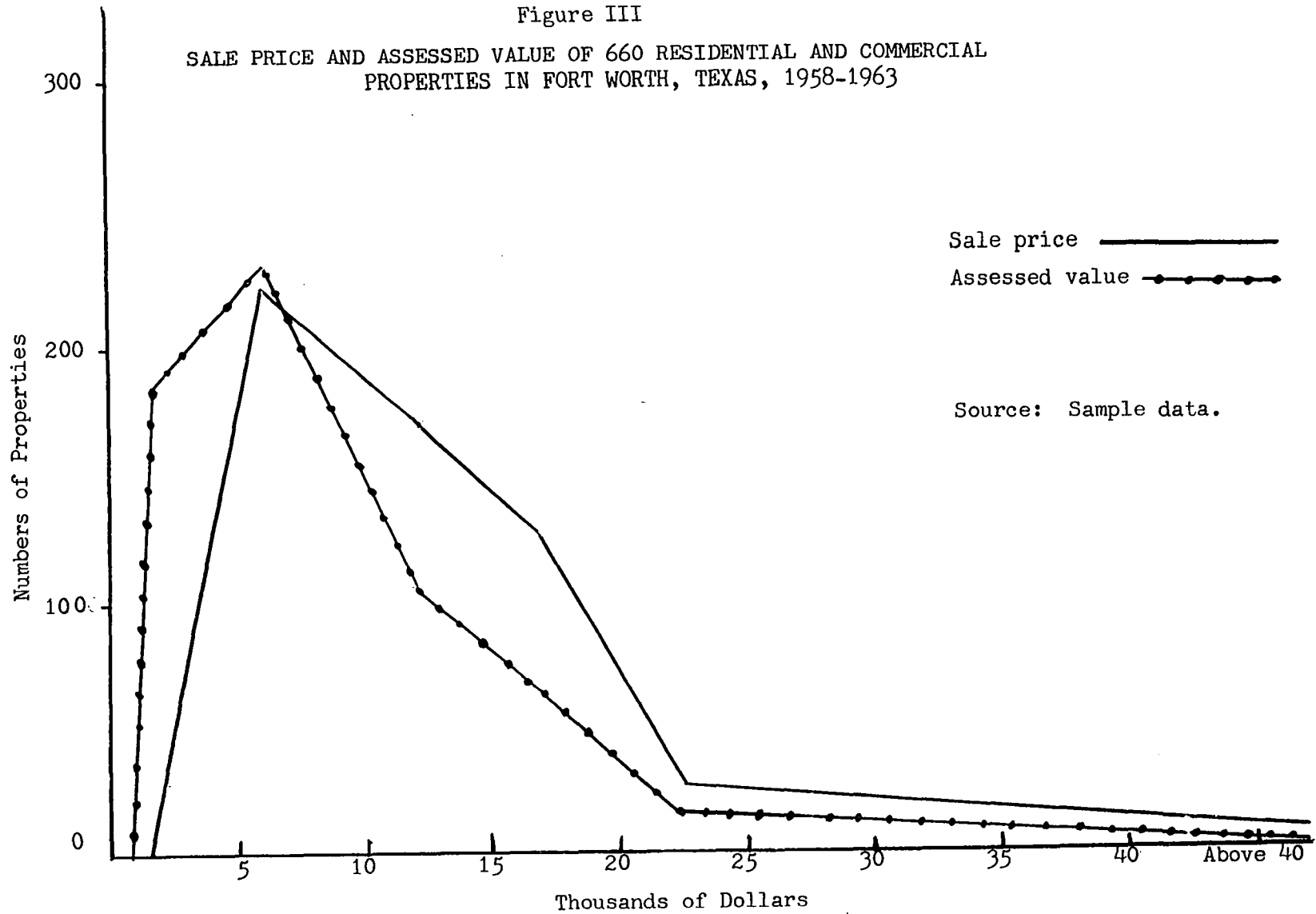
TOTAL ASSESSED VALUE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Value	Number of Properties	Per Cent	Cumulative Per Cent
\$ 0 - 5,000	194	29.4	29.4
5,001 - 10,000	228	34.6	64.0
10,001 - 15,000	100	15.1	79.1
15,001 - 20,000	63	9.5	88.6
20,001 - 25,000	23	3.5	92.1
25,001 - 30,000	22	3.3	95.4
30,001 - 40,000	14	2.2	97.6
40,001 & above	16	2.4	100.0
Total	660	100.0	

Source: Compiled from sample data.

Figure III

SALE PRICE AND ASSESSED VALUE OF 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963



Source: Sample data.

Sixty-seven per cent of the residential properties were valued at less than \$10,000 (Table 19). None were valued as high as \$60,000.

Forty-eight per cent of the commercial properties were valued at less than \$10,000 (Table 20). This fact confirmed the figure given for condition of commercial properties where 40 per cent were found to be in a poor or obsolete condition. Commercial properties in the sample included many small, older properties.

Correlation Analysis

Correlation analysis was performed on the data in a variety of series (Table 21). The Pearson Product Moment formula was used among the variables to determine the simple correlation coefficients existing between them.

The first series of correlations were computed to see if the appraising functions had any impact upon sale prices. The first such correlation was computed with the date appraised. The coefficient of correlation of 0.10 revealed that the date appraised had little impact upon price.⁵

Second, the sale price was correlated to the assessed value resulting in a coefficient of correlation of 0.93. The high correlation suggested that the appraisers in the city tax office were doing a

⁵Other series were correlated which demonstrated little or no correlation. In the case of the correlation existing between the date appraised and zoning, the resulting coefficient was 0.01. No correlation existed between these two factors. Another set of variables which displayed little correlation was the relation of date appraised and land value, which yielded a correlation coefficient of 0.09.

TABLE 19

TOTAL ASSESSED VALUE, FOR TAX PURPOSES, OF 550 RESIDENTIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963¹

Value	Number of Properties	Per Cent
\$ 0 - 5,000	158	28.7
5,001 - 7,500	75	13.6
7,501 - 10,000	134	24.4
10,001 - 15,000	87	15.8
15,001 - 20,000	51	9.3
20,001 - 25,000	21	3.8
25,001 - 30,000	16	2.9
30,001 - 40,000	5	.9
40,001 - 60,000	3	.6
60,001 & above	0	.0
Total	550	100.0

Source: Compiled from sample data.

TABLE 20

TOTAL ASSESSED VALUE, FOR TAX PURPOSES, OF 110 COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963

Value	Number of Properties	Per Cent
\$ 0 - 5,000	33	30.0
5,001 - 7,500	12	10.9
7,501 - 10,000	8	7.3
10,001 - 15,000	15	13.6
15,001 - 20,000	12	10.9
20,001 - 25,000	2	1.8
25,001 - 30,000	6	5.5
30,001 - 40,000	9	8.2
40,001 - 60,000	3	2.7
60,001 & above	10	9.1
Total	110	100.0

Source: Compiled from sample data.

TABLE 21

SIMPLE LINEAR CORRELATION ANALYSIS OF 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963

Variables	Coefficients of Correlation
Sale Price to Date Appraised	$R(1, 2) = .103796$
Sale Price to Appraised Value	$R(1, 3) = .934631$
Sale Price to Land Value	$R(1, 4) = .881645$
Sale Price to Improvements Value	$R(1, 5) = .798595$
Sale Price to Zoning	$R(1, 6) = .393420$
Sale Price to Class	$R(1, 7) = .603534$
Date Appraised to Appraised Value	$R(2, 3) = .111336$
Date Appraised to Land Value	$R(2, 4) = .091937$
Date Appraised to Improvements Value	$R(2, 5) = .117073$
Date Appraised to Zoning	$R(2, 6) = .006242$
Date Appraised to Class	$R(2, 7) = .111504$
Appraised Value to Land Value	$R(3, 4) = .947547$
Appraised Value to Improvements Value	$R(3, 5) = .846998$
Appraised Value to Zoning	$R(3, 6) = .427001$
Appraised Value to Class	$R(3, 7) = .605108$
Land Value to Improvement Value	$R(4, 5) = .632700$
Land Value to Zoning	$R(4, 6) = .511278$
Land Value to Class	$R(4, 7) = .643600$
Improvements Value to Zoning	$R(5, 6) = .184508$
Improvements Value to Class	$R(5, 7) = .396150$
Zoning to Class	$R(6, 7) = .756827$

Source: Computed from sample data.

competent job. The correlation also revealed that the sale price was significant as a value determining characteristic. Further, it was mentioned previously that the price of housing could be somewhat stabilized by the real estate brokers in the community. This correlation reflected the idea that price was both a determining factor in some cases and in a few cases price was determined by the valuations of the assessor. Since it was known that brokers refer to tax data (and so for that matter do the real estate appraisers for mortgage bankers), it was logical to assume that correlation in this instance could work both ways. Therefore, this correlation suggested a double-edged sword in which the assessor set values on properties which were in part based on prices set by brokers. In other words, price could be in part determined by the assessor's valuation.

Another significant variable of price was land value. The value of land correlated highly with sale price (0.88), suggesting that land values tended to influence sale prices. The reverse was true and likely more significant. Sale prices of land influenced land values.

Sale price was significantly influenced by both improvement values and by the structural class of the building or residence. The structural class referred to the size and quality of the structure. Zoning apparently had little impact upon the sale price of properties but the coefficient (0.39) was large enough to suggest some influence.

The next variable treated with correlation analysis was the appraised value of properties. Important factors here included the land valuation (0.94) and the improvement valuation (0.85). Important, but not highly significant, were the variables of zoning and the size

and quality of the structures. These coefficients were 0.43 and 0.60, respectively. The size and quality of structures were noted in the structural classifications used by the city assessor to typify various structures. Residential houses, for example, ranged from a "one," which was a very cheaply constructed small house, to an "eight," which was an excellently constructed house of large size. These classifications, which will be explained in detail in the chapter on human judgment, correlated only moderately with the total appraised values. The assessed value was primarily a function of improvement value and land value.

The most important variable acting on the assessed value was the price of properties. The coefficient of 0.93 was one of the highest of all correlations made. It revealed rather clearly that assessed values on the average were very close to sale price.

To break down assessed value further, correlations were performed on land values and improvement values. Land value was correlated with price, zoning, structural class, and improvement value. The only highly significant factor relating to the assessed value of land was the price of land with a coefficient of 0.88. Some degree of correlation existed between land value and the improvement value (0.63). The net result was low enough to suggest that high and low valued land may contain high or low valued improvements. The other factors measured had some impact on land value but price was the most significant variable.

The coefficient of improvement value and price was 0.80. Correlation was not as high as land value and sale price. The next

factor of importance to the improvement value was that of structural classification with a coefficient of correlation of 0.40. There was some correlation between these two variables.

Finally, the coefficient of correlation was measured relating zoning and structural classification. The coefficient of correlation was 0.76, and suggested that zoning as it advanced from "one," which was single family, to "seven" which was heavy industrial, corresponded closely to structural classifications in both residential and commercial properties.⁶ Commercial properties tended to be of higher quality than residences.

Average Deviation Measures

Average deviations were computed in order to determine the amount of dispersion. The average deviation of the residential properties was \$4,400. Properties' assessed values deviated from their sale prices by that amount. The average deviation figures were computed on the basis of absolute variation of assessed values from their sale prices. The average deviations did not match the assessment ratios because the assessment ratios were computed in such a manner that positive variations offset negative variations. The average deviation of residential sale prices from their mean was 32.5 per cent of the mean of \$13,521. The average deviation for commercial properties was \$7,352. In percentage terms this was a 29.1 per cent variation from the mean

⁶Class: (1) One family dwelling, (2) Two family dwelling, (3) Apartments, (4) Commercial, Services, (5) Commercial, (6) Light Industrial, (7) Heavy Industrial.

price of commercial properties of \$25,106. There was relatively more variation in the sale prices and assessed values of residential properties than of commercial properties.

Average deviations were computed for properties according to various sale classes (Table 22). As the price of properties increased from the lowest class to the \$35,001 to \$40,000 class, the relative variation within the categories diminished. The reason for the variation in lower categories was due to the large number of older properties. In the middle ranges (\$15,000 to \$35,000) there was a closer proximity of sale price to assessed value. This closeness was due to the fact that in middle ranges of sale price, properties were more similar to each other than at the extremes. Residential tract houses were an example of this. Above \$40,000 the variation decreased because of the large number of older commercial buildings in these groups.

Summary

The distribution of sale prices for the 660 properties was skewed positively, with a large number of properties valued below the mean figure of \$14,784. The distribution of assessed values of the 660 properties was more positively skewed than the distribution of sale prices. There was relatively more variation present in the sale prices than in the assessed values. Eighty-four per cent of the properties in the sample sold for less than \$20,000, while 88 per cent were assessed for less than \$20,000, suggesting that most properties were under assessed.

No one broker sold more than fifty-two of the properties in the sample; ten of the brokers in the community sold 55 per cent of the total.

TABLE 22

AVERAGE DEVIATION OF ASSESSED VALUES FROM PRICE BY LEVELS OF
 SALE PRICE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Sale Price	Average Deviation	Class Mean of Selling Price	Average Deviation as a Per Cent of Mean of Class
\$ 0 - 5,000	\$ 2,030	\$ 3,610	56.2
5,001 - 10,000	3,252	7,772	41.8
10,001 - 15,000	4,317	12,782	33.8
15,001 - 20,000	5,314	17,382	30.6
20,001 - 25,000	6,517	22,979	28.4
25,001 - 30,000	6,853	27,714	24.7
30,001 - 35,000	7,566	33,341	22.7
35,001 - 40,000	13,449	37,925	35.5
40,001 - 50,000	11,736	45,608	25.7
50,001 - 60,000	18,702	57,500	32.5
60,001 & above	28,041	122,364	22.9

Source: Computed from sample data.

Most structures in the sample were built after 1940 and were of frame construction. Thirty-nine per cent of the commercial properties in the sample were in poor or obsolete condition, while 74 per cent of the residential properties were in good condition.

Correlations revealed the most significant relationships leading to final assessed value. Most significant was the sale price of properties. The value of land was closely related to sale price of land. The improvement valuation was also influenced by sale price, but not to such an extent as was land value. Little significance could be attached to the impact of zoning on the assessed value. Likewise, the size and quality of the structures was not as important in determining final assessed value as was sale price.

The absolute dispersion of residential properties was greater than that of commercial properties. When average deviations were computed for levels of sale price, the middle ranges (\$15,000 to \$35,000) of property sale prices showed a closer correspondence to assessed value than low priced properties. High priced properties appeared to be assessed at closer to sale price than low priced properties.

CHAPTER IV

THE EFFECT OF HUMAN JUDGMENT

This study was based on the assumption that "fair market value" was the best evidence of taxable value. The limitations of this concept were set forth in Chapter I.

In the appraisal of real estate in Fort Worth there were three methods employed--sometimes severally, sometimes jointly. These methods were the "sales analysis" method, the "income capitalization" method, and the "replacement cost" technique. For commercial and residential improvements, the replacement cost technique was widely employed. For the appraisal of residential land, the sales analysis method was used, while in the appraisal of commercial land, it was necessary for the appraiser to use both the sales analysis method and the income capitalization method. (Replacement cost is described in Appendix A.)

The Collection of Sales Data

Whichever method of appraisal was used, sales and income information formed an integral part of the appraisal process. In the sales analysis technique and income capitalization method of appraisal, both sales and income information were used. In the replacement cost technique, sales data were equally necessary in order to extract the residual of the land value from the improvement values. The quality of

the sales and income data reflected the closeness with which the assessed value was matched to the sale price.

The sales analysis methodology was employed where land was vacant. The reason for this application of the sales analysis method was the difficulty of adequately appraising vacant land. In most instances, there was no replacement cost involved and the land may not have produced income.¹ Therefore, the sales analysis method was used.

Sales data was probably the largest available source of value information even though sales of properties were infrequent. The primary source of value information was the recorded deeds in the county clerk's office. The information utilized by the city tax assessor included: (1) the legal description, (2) the volume and page numbers, (3) date recorded, (4) the type of conveyance, (5) the consideration, and (6) the amount of revenue stamps. Since deeds were usually recorded the assessor could have known about most sales in the community.

For other evidences of sales, the assessor used newspaper advertisements, statements from real estate brokers and owners of property. Loan information was obtained from lending institutions and title companies. There were, in conclusion, a large number of persons engaged in the sale and transfer of real estate who provided information to the assessor regarding sale prices as evidences of value.

Most important to the assessor should have been whether or not a sale may be used to represent "fair market value." The assessor was

¹Truett B. Marshall, The Assessment of Real Property: A Manual for Fort Worth, Texas (Austin, Texas: 1962), p. 59.

faced with the problem of evaluating the information he had available. Normally, the date of sale was important because it indicated whether the sale was recent enough to be indicative of then current values. Further, the transfers of property between relatives or friends, in so far as this was ascertainable, revealed cases where the stated price was not "fair market value." The federal revenue stamps served as a method of checking the accuracy of the stated consideration. These stamps were sold at a price of \$1.10 for each \$1,000 of the sale price. These stamps applied only to cash transactions and only when no previous mortgage or encumbrance was assumed by the grantee. If the property involved a trade, the stated sale price did not always represent a "fair market value."

Besides evidences of sales, the assessor attempted to collect data on the income of various properties, particularly commercial properties. The field appraiser collected lease information from tenants.² Lease information also had to be analyzed to determine its validity for assessment purposes. This judgment was made largely by the field appraiser.

The Use of the Depreciation Factor

The appraisers in the city tax office used a depreciation factor in their assessments. The normal depreciation table contained the factors used by the assessor for the evaluation of residential and commercial properties in the community. If a property was "100 per cent

²Lease information included the amount of money paid, the term of the lease, the type of facility leased, and its use.

good" it meant that the property had not depreciated any of its useful life (Table 23). The normal depreciation table was constructed on the basis of applying an aging characteristic to the replacement cost of improvements. This characteristic was the life expectancy of various structures (Table 24). As the value of the depreciation factor increased from 20 per cent to 100 per cent, the frequency of its occurrence increased. This increase was to be expected in most communities which had shown growth in recent decades. (See Appendix B.)

In the application of an ageing concept, the greatest amount of depreciation that could take place, as far as the City of Fort Worth was concerned, was 80 per cent. Thus, the "20 per cent good" figure represented the salvage value of structures. Although only fifteen of these properties appeared in the sample, the effect of the use of the "20 per cent good" factor (instead of depreciating properties to zero) served as a penalty against the preservation of old and decrepit structures. From this standpoint the "20 per cent good" factor could have served a useful purpose in the development of a more desirable community.

One problem in the application of the depreciation factor was the time lag between reassessments, which accounted for a large number of properties valued in the highest categories which should not have been there. The depreciation factor for each property was not calculated every year, but was recalculated only during the reappraisal programs. Thus, if the depreciation factor was set at 97 per cent, this figure stood until the next time a reappraisal of the property was made. This time lag could have been up to nine years.

TABLE 23
DEPRECIATION FACTOR FOR IMPROVEMENTS OF 660 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS
1958-1963

"Per Cent Good"	Number of Properties	Per Cent
20 (salvage value)	15	2.1
21 - 30	12	1.9
31 - 40	11	1.8
41 - 50	37	5.7
51 - 60	49	7.5
61 - 70	52	7.6
71 - 80	80	12.0
81 - 90	106	16.1
91 -100	276	42.0
No structure	22	3.3
	660	100.0

Source: Compiled from sample data.

TABLE 24

TABLE OF THE LIFE EXPECTANCY OF STRUCTURES USED BY
THE CITY OF FORT WORTH ASSESSOR'S OFFICE

Type of Structure	Class of Structure ^a (Residential)							
	1	2	3	4	5	6	7	8
Wood	35	40	50	60	65	70	75	75
Wood with veneer		45	55	65	70	70	75	75
Masonry	40	45	60	65	70	70	80	80

	Class of Structure ^b (Commercial)					
	1	2	3	4	5	
Wood		25	35	50	60	65
Wood with veneer			40	55	65	70
Masonry		30	45	60	70	75
Concrete		35	50	65	75	80
Steel		30	50	65	75	80

- ^a1. Small cheaply constructed dwelling, typical space: 400 sq.ft.
 2. Small cheaply constructed dwelling, typical space: 600 sq.ft.
 3. Small to medium averagely constructed dwelling, typical space: 800 sq.ft.
 4. Average dwelling, good construction, typical space: 1,000 sq.ft.
 5. Average to large dwelling of good construction, typical space: 1,600 sq.ft.
 6. Medium large dwelling of very good construction, typical space: 2,000 sq.ft.
 7. Large dwelling of very good construction, typical space: 2,500 sq. ft.
 8. Large dwelling of excellent construction, typical space: 3,500 sq. ft.

- ^b1. Small, light, unattractive cheaply constructed building with poor workmanship and design, typical space: 600 sq. ft.
2. Small to medium building of fair materials, design, and workmanship, typical space: 1,200 sq. ft.
3. Average size building of good materials, workmanship and design, attractive appearance, typical space: 2,500 sq.ft.
4. Average to large building of good materials, construction and professionally designed, attractive in appearance, typical space: 6,000 sq.ft.

Another problem of depreciation was revealed in a clustering of depreciation percentages applied to properties beginning with the "30 per cent good" figure and clustering fairly consistently around all increments of five, up to the higher "per cent good" figures. Nothing in the structure of the depreciation table or in the age of properties accounted for this clustering. The inconsistency in the groupings around the increments of five could have been indicative of a misapplied depreciation factor. It might be suggested that the reason for these increments of five appearing so frequently was the desire to make the computation of the tax value less arbitrary and less difficult. This incremental grouping was a shortcoming in the application of the methodology, but perhaps only technically.

A similar feature in the use of the depreciation factor was that sixteen properties were depreciated at the "50 per cent good" level. None of the "per cent good" factors below 50 or above 50 were as frequent until the "80 per cent good" level. Since the depreciation factor was based on normal life expectancy, and the depreciation tables were constructed from that, the likelihood of having this many items clustered around 50 per cent was slight.³

It can be concluded that the depreciation factor used by the city assessor's office, though constructed in a precise manner, was not utilized in an altogether adequate manner. The depreciation computation was important from the standpoint of taxpayers, because it made an

³Another misapplication of the factor was revealed when 95 per cent was used in sixty-nine of the cases, whereas 94 per cent was used in only one instance. The depreciation table was structured so that 95 could appear no more frequently than 94. This appeared to be another case of appraisers using an easy computation rather than an accurate one.

appreciable difference in the amount of taxes that a property owner paid. The depreciation factor was the final computation of taxable value. The improvements were appraised on the basis of replacement cost and the depreciation factor should be used at that point to modify the value to the age of the property.

Assessment Results

The largest number of properties in the sample were found in the \$5,001-\$10,000 assessment class (Table 25). This class contained 35 per cent of all properties. In the sample, 89 per cent of the real properties were valued at less than \$20,000, whereas 11 per cent were valued at more than \$20,000.⁴

Seventy-five per cent of buildings and structures on lands in the sample were valued at less than \$10,000 (Table 26). The average structural value was \$7,000.

Eighty-eight per cent of the parcels of land in the sample were valued at less than \$5,000 (Table 27). This revealed that there was little difference in the valuations of most commercial and residential land.

Assessment Ratios

Ratios of assessed value to sale price were computed for sale price levels. A ratio of unity meant that the assessed value was 100 per cent of sale price (Table 28). The ratios varied from 0.43 in the

⁴The mean assessed value of the properties was \$11,800, whereas the median had a value of \$8,320. The mode had a value of \$3,080.

TABLE 25

TOTAL ASSESSED VALUE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Value	Number of Properties	Per Cent
\$ 0 - 5,000	194	29.4
5,001 - 10,000	228	34.6
10,001 - 15,000	100	15.1
15,001 - 20,000	63	9.5
20,001 - 25,000	23	3.5
25,001 - 30,000	22	3.3
30,001 - 40,000	14	2.2
40,001 & above	16	2.4
Total	660	100.0

Source: Compiled from sample data.

TABLE 26

ASSESSED VALUE OF THE STRUCTURAL IMPROVEMENTS OF 660 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS, 1958-1963

Value	Number of Properties	Per Cent
\$ 0 - 5,000	243	36.9
5,001 - 7,500	154	23.6
7,501 - 10,000	97	14.7
10,001 - 15,000	82	12.5
15,001 - 20,000	32	4.8
20,001 - 25,000	20	3.0
25,001 - 30,000	5	0.7
30,001 - 40,000	3	0.4
40,001 - 60,000	3	0.4
60,001 - 80,000	0	0.0
80,001 - 100,000	1	0.1
100,000 & above	1	0.1
None	19	2.8
Total	660	100.0

Source: Compiled from sample data.

TABLE 27

ASSESSED VALUES OF LAND FOR 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS, 1958-1963

Land Values	Number of Properties	Per Cent
\$ 0 - 5,000	578	87.6
5,001 - 7,500	32	4.8
7,501 - 10,000	10	1.5
10,001 - 15,000	9	1.3
15,001 - 20,000	7	1.0
20,001 - 25,000	3	0.4
25,001 - 30,000	4	0.6
30,001 - 40,000	7	1.0
40,001 - 60,000	2	0.3
60,001 & above	7	1.0
Total	660	100.0

Source: Compiled from sample data.

TABLE 28

RATIO OF ASSESSED VALUE TO SALE PRICE OF 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
1958-1963

Sale Price	Ratio
\$ 0 - 5,000	.43
5,001 - 10,000	.67
10,001 - 15,000	.69
15,001 - 20,000	.78
20,001 - 25,000	.79
25,001 - 30,000	.80
30,001 - 40,000	.88
40,001 & above	.79

Source: Computed from sample data.

lowest sale price class to 0.88 in the \$30,001 to \$40,000 sale price class. The ratios tended to increase as the sale price of the properties increased up to the \$40,000 point. In the highest sale price class the ratio declined. Small numbers of items with high sale prices made it difficult to compute meaningful ratios in the upper price classes.

For the middle priced groups of properties, \$15,001 up to \$35,000, the ratio of assessed value to sale price was higher than in groupings above and below this point. The closeness to unity of ratios in the middle price groups was due to the large numbers of similar properties in these groups. The appraisers were more familiar with these types of properties than they were with expensive and inexpensive properties. Where properties of a certain type were more numerous, it was easier for the appraiser to do his work effectively.

When land values were computed as ratios to sale prices, there was less variation present than in the ratios of improvement values to sale prices. Land values should have been close to sale prices, because land values correlated higher with sale prices than did improvement values. Land values in the \$5,001 to \$20,000 price groups were around 16 per cent of the sale price (Table 29). Under \$5,000 and above \$20,000 there was less consistency. The land in the lower price units appeared to be worth more relative to sale price than was true among more expensive properties. What altered the ratios of the groups above \$20,000 was that these groups contained many commercial properties.

The value of improvements was computed as a ratio to sale price and a consistency was discovered within the \$5,001 to \$20,000 price range. These ratios were more diverse than the land ratios, varying from

TABLE 29

RATIO OF LAND VALUE AND IMPROVEMENT VALUE TO SALE PRICE OF 660
RESIDENTIAL AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
1958-1963, BY LEVELS OF SALE PRICE

Sale Price	Land Value Ratio	Improvement Value Ratio
\$ 0 - 5,000	.31	.51
5,001 - 10,000	.17	.46
10,001 - 15,000	.15	.53
15,001 - 20,000	.17	.59
20,001 - 30,000	.26	.53
30,001 & above	.37	.43

Source: Computed from sample data.

46 per cent to 59 per cent of the sale price (Table 29). The improvement ratios varied more than land ratios because land valuations were based more on sales data than were improvement valuations.

The obsolete condition of many of the structures in the sample was reflected in the category above \$30,000. The low ratio of 0.43 was caused by the obsolete condition of many of the commercial structures. From the ratios computed, assessment of land and property improvement appeared to find the greatest consistency of value with sale price in the middle ranges. These consistent ranges of ratios within the middle levels of sale price were due to standardization of the use, the size of land parcels, and to the standardization of construction of commercial buildings and residences. Where properties were not similar (and where only a few comparable properties existed) the appraisers were less able to assess value in a consistent manner.

The Reappraisal Program

A reappraisal program of real estate was begun in the City of Fort Worth in 1961. The city had a new appraisal manual with which it hoped to improve the appraisal of real estate during this program. All reappraisals, beginning in 1961, were made on 100 per cent of market value. In the past, this varied to an average as low as 55 per cent of market value. Thus, properties reappraised--those properties in the sample appraised in 1961 and later years--should have approximated 100 per cent of market value.

In order to compare the reappraisal program with the older program, the values of the properties assessed prior to 1961 were increased

in value to correspond to 100 per cent of market value.⁵ For practical purposes, the reappraisal program was probably slightly more effective than the older programs of reappraisal (Table 30). The average ratio of assessed value to sale price of properties which had been reappraised was 0.87, whereas in the older appraisals, the ratio of the recapitulated assessed value to sale price was 0.76.

The source of improvement in the newer program lay in several directions. One was the improvement of personnel. The newly hired appraisers were educationally better qualified than older appraisers. Another source of improvement in the new program was the design of the new appraisal card. The card was more complete, it left less to judgment, took into consideration more factors, and was more precise than the form of the older cards (see Appendix C).

Properties which were appraised in 1957 had an average sales ratio of 0.62, whereas the properties appraised in 1958 had a ratio of 0.83. In the figures prior to 1961, there was an increase in the quality of appraisal in each succeeding year. The 1960 figure of 0.94 was higher than the two years of 1961 and 1962 considered under the reappraisal program. The reason for increases in the ratios for 1957 through 1960 may have been that many properties appraised during these prior years were sold in later years, thus reflecting for those properties lower ratios.

⁵When the tax bill was computed for properties evaluated at 100 per cent of market value, the rate of payment was a dollar amount of tax applied to 55 per cent of the assessed value. When the tax bill was computed on properties assessed at 55 per cent of market value, the bill was computed on 100 per cent of this amount. This kept some sense of equity in the transition from old to new appraisal programs. To make data comparable, the value figures prior to 1961 were divided by .55.

TABLE 30

RATIO OF ASSESSED VALUE TO SALE PRICE OF 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY DATE OF APPRAISAL

Date of Appraisal	Ratio	Average Ratio
1953 - 1956	.539	.756
1957	.623	
1958	.834	
1959	.846	
1960	.938	
1961	.876	.870
1962	.864	

Source: Computed from sample data.

According to the city tax office, the reappraisal program was about one-half completed in 1963. The percentage might have been closer to 57 per cent as reflected in the sample (Table 31). The city hoped to plan future reappraisals every four years. Within the four years, the cycle should have been completed. It was an ambitious undertaking and an average of twenty-five reappraisals had to be made each working day by each appraiser. It was not considered likely that this could be done and still assess each individual property in detail.

The reappraisal process had encompassed 77 per cent of the commercial properties in the sample (Table 31). The reason for this high number was that the reappraisal of the downtown business district had already taken place. The ratio of assessed value of commercial properties to sale price was 0.91 while the ratio of assessed value of residential properties to sale price was 0.70. It could be concluded that the appraisal of commercial properties depended more on sales data than did the appraisal of residential property. Commercial properties were probably assessed more carefully than were residences.

The Work of the Individual Appraisers

In 1963, there were twenty-five appraisers of real estate for the City of Fort Worth. Of the twenty-five, five were land appraisers and twenty were improvement appraisers.

The task confronting the men who pursued the work of field appraisals was a difficult one. One problem was the definition of value. Even when this term was narrowed to apply to real estate, there were many conditioning factors. For example, replacement cost has been

TABLE 31

DATE OF APPRAISAL OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963, BY CLASS

Date of Appraisal	Residential	Commercial	Total
1954	4	0	4
1955	2	0	2
1956	2	1	3
1957	6	1	7
1958	43	3	46
1959	25	2	27
1960	158	17	175
1961	176	10	186
1962	131	73	204
1963	0	1	1
Not Reported	3	2	5
Total	550	110	660

Source: Compiled from sample data.

equated with value by persons engaged in insurance work. Further, value for loan purposes was the amount the lender was willing to risk and in his computations he considered not only some form of value of the property but also the reputation of the borrower.⁶ For investment purposes, value was based on the income from the investment. Other concepts of value were found in condemnation and bankruptcy proceedings.⁷ Thus, value appeared in these instances to be connected with the purpose of the appraisal.

"Fair market value" was defined by the International Association of Assessing Officers as follows:

The amount of money or monies' worth for which goods or services may be exchanged within a reasonable period of time under conditions in which both parties to the exchange are able, willing and reasonably well informed.⁸

Operating under this definition of value, the appraiser was required to exercise a carefully calculated judgment.

Judgments of Condition

Most judgments of condition by the individual appraisers clustered around "good" condition (Table 32). Although the improvement appraisers normally worked in pairs, the condition of properties was listed according to each appraiser, disregarding the fact that he was working with another person at the time. The name of the appraiser was available for 233 of the 660 properties. There was not much uniformity

⁶Marshall, p. 28.

⁷Ibid.

⁸Ibid.

TABLE 32

402 JUDGMENTS OF CONDITION OF RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY APPRAISER, 1958-1963

Appraiser	Condition				
	Good	Fair	Poor	Obsolete	Not Reported
A	5				
B	10	1			
C	17	1	2		
D	5	1	5	5	1
E	6	2	5	4	1
F	11		1		
G	12	2	2	1	
H	14		1		
I	12	3	4		
J	26	4	6	13	
K	9	2	1	4	1
L	13	2	4		1
M	9	1	1		
N	13	3			
O	28	3	3	5	
P	5				
Q	4	3	5	5	1
R	4	1			
S	6	2			
T	6	1	1		
U	10	1	3		
V		1	1		
W	6				
X	7	1	4	11	
Y	5	1	2	4	
Z	4	1	4	2	
AA	4				
Total*	251	37	55	54	5
Per cent of Total	62.4	9.2	13.7	13.5	1.2

*The total of 402 would not indicate the total number of properties assessed, but the total number of judgments rendered on the properties in question. In some instances two and sometimes three appraisers judge the same property.

Source: Compiled from sample data.

in judgments about the condition of properties. In the case of condition for all the properties, 62 per cent were judged to be in "good" condition. In the case of the other categories, the data showed a reticence on the part of the appraisers to differentiate between "fair" and "poor" and between "poor" and "obsolete" condition.

Even when appraisers worked with many properties, the only consistent pattern was the use of "good" condition most of the time. Some variation existed in the work of particular appraisers. For example, Appraiser O assessed five of thirty-nine properties as "obsolete" while Appraiser J judged thirteen of forty-nine properties as "obsolete." This discrepancy could be purely random, but in the case of Appraiser H there was some question. Of the fifteen properties he appraised, none were in "fair" or "obsolete" condition. It could be possible that perhaps one of the fourteen "good" properties should have been "fair," "poor," or "obsolete."

Depreciation

The pattern of use of depreciation factors by individual appraisers may be observed in Table 33. In cross classification it was impractical to present the data in more detail, but by the use of the table it was possible to see the increases in frequency of the higher "per cent good" values among appraisers.

A check was made of the original data in order to establish whether specific appraisers were responsible for the clustering of the "per cent good" around increments of five. The appraisers with the largest numbers of properties which were depreciated at even amounts

TABLE 33

JUDGMENT OF PER CENT OF REMAINING USEFUL LIFE OF 398 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS, BY APPRAISER,
1958-1963

Appraiser	"Per Cent Good"									Total
	20*	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	
A						1	2	1	1	5
B						1	7	2	1	11
C				1		5	3	5	6	20
D	3	2	2	2	1	1	3	1	1	16
E	2	1	3	2	2	1	3	2	1	17
F					1		2	6	3	12
G				1		3	2	6	3	15
H					1	1	3	4	6	15
I				1	4	2	5	3	4	19
J	5	5	4	4	1	6	6	12	4	47
K	2	1	1	2	2	4	1	3		16
L				3		4	5	6	1	19
M					1	2	4	1	3	11
N						2	4	5	5	16
O	3	1	1	3	4	2	10	5	10	39
P							1	2	2	5
Q	1	1	2		5	2	2	2		15
R						1		2	3	6
S						2		2	4	8
T				1		1	3	4		9
U					3	1	6		5	15
V					1	1				2
W							2	5		7
X	4	4	4	1	3	2	1	3	1	23
Y	3	1	2		1		2		3	12
Z	1	1		4	2		1		3	12
AA		1	1				3	1		6
Total	24	18	20	25	32	45	81	83	70	398#
Per cent of total	.06	.05	.05	.06	.08	.11	.20	.21	.18	

*Salvage value

#The total of 398 would not indicate the total number of properties assessed, but the total number of judgments rendered on the properties in question. In some instances two and sometimes three appraisers judge the same property.

Source: Compiled from sample data.

were isolated from the total (Table 34). Certain appraisers tended to round the depreciation factor to even amounts. Appraiser G was responsible for the largest percentage of properties appraised by one man that centered on even fives or zeroes in the "per cent good" factor. Appraiser G fixed the "per cent good" at such a point in eight of fifteen cases, or 53 per cent of the time. Appraiser B was next with 45 per cent of the properties he appraised.⁹

Assessment Ratios by Individual Appraisers

Most of the appraisers were doing an excellent job (Table 35). The ratios of assessed value to sale price were computed according to who assessed the property. The ratios for the most part were quite high.

Some discrepancy among appraisers was apparent. Appraiser J's ratio was only 0.32. Appraiser J assessed properties materially lower than the other appraisers even though he had the largest number of properties appraised to his credit. All of these properties were appraised during the reassessment program which began in 1961. Therefore, these properties were all theoretically appraised at 100 per cent of their market value.

Another difference was in the work of Appraiser Y who over-assessed in a sufficient number of cases so that the ratio of his appraisals to sale prices was 1.35. Another appraiser whose work was over 100 was Appraiser S, but only in the case of a few properties.

⁹The depreciation table was constructed so that each number from 20 to 100 was represented by a relatively constant number of cases.

TABLE 34

THE "PER CENT GOOD" OF PROPERTIES AT INCREMENTAL FIVE PER CENT
LEVELS, BY APPRAISER, 1958-1962

Appraiser	(1) Properties "Per Cent Good" at Even 5's or Zero's	(2) Total Properties Appraised	(1) As Per Cent of (2)
B	5	11	45.4
C	5	20	25.0
G	8	15	53.0
J	12	47	25.5
K	6	17	35.3
N	4	16	25.0
O	9	39	23.1

Source: Compiled from sample data.

TABLE 35

RATIO OF ASSESSED VALUE TO SALE PRICE OF 234 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN THE CITY OF FORT WORTH, TEXAS,
BY APPRAISER,* 1958-1963

Appraiser	Ratio
A	.93
B	.95
C	.98
D	.92
E	.91
F	.99
G	.92
H	.93
I	.92
J	.32
K	.90
L	.85
M	.95
N	.93
O	.99
P	.88
Q	.82
R	.94
S	1.03
T	.92
U	.78
V	.96
W	.90
X	.94
Y	1.35
Z	.84

* Only in the case of 234 of the 660 properties was it possible to ascertain the name of the appraiser.

Source: Compiled from sample data.

The one who appraised most closely to sale price was Appraiser O, with the sales ratio of 0.99. These numbers were all rounded off, but Appraiser O most closely approximated the sale price of the properties in his appraisals.

The other appraisers in most instances assessed in the high 80's or the low-to-middle 90's. Most appraisers typically assessed at slightly under market value. Underassessment, however, was not true in the case of Appraisers F and Y. It can be concluded from the data in this table that the appraisers were not doing the same quality of appraisal work.

Improvement Appraisal

The valuation of improvements by the improvement appraisers correlated relatively highly with the sale price of the properties. Although high correlation existed, there were still problems in improvement appraisal. One problem was the use of replacement cost.¹⁰ Mathematically, replacement cost (even with the allocation of the depreciation factor) did not in every instance satisfy the market value of a particular property. In some instances, the replacement cost did not reflect methodology in construction. For example, replacement of a large central heating system of an older style might well be impossible and well nigh prohibitive, and in some instances unnecessary. Therefore, in what way was it reasonable to assume that the replacement cost of this or a comparable item would have had the depreciable market value

¹⁰ An estimate was made by the appraiser on the cost of replacing the structure with present cost figures; this estimate was then adjusted with the use of a depreciation factor.

that was part of the computation of the improvement value? Modern insulation in building diminished the necessity for particularly thick walls so there was little feasibility in determining the replacement cost of a heavy structure when in all likelihood it would not be built in the same manner in a later period. The problem with replacement cost was that technology changed over time and no single depreciation factor was suitable in depreciating something which could not have existed or need not have existed at a later date. Thus, replacement costs did not represent a realistic method for the appraisal of properties. The inapplicability of replacement cost was most true in the appraisal of older properties.

Land Appraisal

It was not possible to determine which land appraiser assessed each parcel of land. The name of the land appraiser did not appear on the tax card, therefore each property had to be traced through a land map before the name of the land appraiser could be determined. This was not feasible in the collection of the data, thus less information was acquired about the land appraisers than about the improvement appraisers.

The land appraisers had a less complicated task mathematically, but a more difficult task conceptually than the improvement appraisers. When land values were correlated to sale prices the correlation coefficient was 0.88. On the average, the land appraiser made a more successful effort to approximate the price of a parcel of land than the appraiser of improvements. One reason for this success was the

similarity of lots in a particular residential tract. These lots had an easily determined market value. On the other hand, without comparable sales the appraisal of land was more difficult than appraisal of improvements, because the sales analysis method was the only method available to the land appraiser. Sales analysis of comparable lots was consequently used more extensively in the appraisal of land than in the appraisal of improvements.

There were more comparable parcels of land available to the land appraisers in most residential areas than was true of improvements. Even houses of the same construction and the same size may have had different additional equipment within them. On the other hand, the land prices were fairly well stabilized within a given tract. Thus, the sales analysis method rendered for the valuation of land a result closer to sale price than did the replacement cost method used in improvement valuations.

Summary

In Chapter IV the work of the appraisers in the city tax office was explored in detail. The variation which arose between sale price and assessed value in the sample can be partially explained by the analysis in this chapter. Where the sales data were used most, as in the case of land appraisal, the results were closer to what the law demanded, that is, "fair market value." Land appraisal also showed more extreme variation than improvement appraisal because of the limited number of comparable sales of vacant land.

Similarity of use, price, and construction of properties played a significant part in the quality of the final assessed value. Where properties of a type were less numerous, as in the case of very expensive homes and older less expensive properties, the ratios of assessed value to sale price varied considerably from 1.0. In older homes the variation diminished to about 0.60, while among very expensive properties the ratio was as high as 1.35.

The depreciation factor was not administered adequately. There was discrepancy in the unusually large number of properties which were depreciated at levels of 5 per cent. Some appraisers depreciated more properties at intervals of five than others. The depreciation factor was misapplied in the case of "50 per cent good" where an inordinately large number of properties bore this depreciation factor. Another abuse of the depreciation factor was the over use of certain "per cent good" figures in the upper brackets.

The reappraisal program in Fort Worth appeared to be a slight improvement over the old appraisal program. Although two years of the new program did not have as high a ratio of assessed value to sale price as one year of the old program, the average ratio was high for properties assessed under the new program.

Not all appraisers did the same quality of work. The range of ratios of assessed value to sale price for individual appraisers was from 0.32 to 1.35. On the other hand, the median ratio was high at 0.92. The appraisers usually appraised very closely to market value, but slightly under market value.

There was sufficient flexibility for interpretation of the methodology among the appraisers to cause wide fluctuation in assessment levels. The primary difficulty was the inability of adjusted replacement cost to duplicate sale price in properties where features were widely dissimilar. Similarity of types of properties was the keynote to equity in assessments and inequity was likely present where a property was unique.

On the whole, the city had a right to be pleased with the quality of work of the appraisal staff, because of the high level of the ratios of assessed value to sale price.

CHAPTER V

THE EFFECT OF TIME

The problem of time in assessment revolves around two basic situations. The first is that of external change to individual properties over time. The second is internal change to individual properties over time.

External changes include changes in the character of neighborhoods. For example, time affects the general appearance of neighborhoods and the relationship of one area to another. Moreover, time can change value factors such as accessibility to persons, places, and things for which the properties are used. Time can bring change in transportation facilities, the character and availability of utilities, and traffic. Even topography may change over time. Thus, time brings change to the physical factors of properties.

Other external changes are less easy to note. For example, economic value influences change over time. The general level of growth and prosperity in the area increases or decreases property values. Factors of the same type are the density of population, patterns of wealth, and ratings for loan purposes.

External changes also are found in legal factors which change by court decision and government policy (local, state, and national). Examples of legal changes are building restrictions and legislation

which directly affects the financing of properties. Urban renewal and planning processes at all levels of government can effect changes in property values.

Some changes are largely intangible. Intangible forms of change include social value influences. Homogeneity of a neighborhood is consistent with the social value of living there and the price of the property follows this. Other social influences which can change are alterations in the cultural and recreational facilities of residential areas. Intangible values such as view, habit, fashion, and nuisances can modify value. Time changes all value factors and many of these factors change at different rates. These factors, whether tangible or intangible, are essentially external influences which affect the value of real estate.

The second aspect of time which affects value is not external change but internal change such as the reconstruction, remodeling, rebuilding, and reapplication of the use of individual properties. External changes take place in the long run. Internal changes, however, take place in a short time; changes within the property other than simple ageing occur within relatively short spans of time.

Changes Over Time

Changes over time were noted in various series. The most significant changes were mentioned in succeeding sections.

Sale Prices and Assessed Values

The sale prices of properties in Fort Worth had been increasing over time (Table 36). Between 1958 and 1963 there was a decrease in

TABLE 36

SALE PRICE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY DATE OF SALE,
1958-1963

Sale Price	Date of Sale						Total
	1958	1959	1960	1961	1962	1963	
\$ 0 - 5,000	2	10	10	13	7	1	43
5,001 - 7,500	28	22	25	20	14	16	125
7,501 - 10,000	18	18	17	19	21	7	100
10,001 - 15,000	29	30	35	28	36	17	175
15,001 - 20,000	19	20	16	21	26	8	110
20,001 - 25,000	6	4	6	7	9	4	36
25,001 - 45,000	13	13	8	9	4	7	54
45,001 - 60,000	4	1	1	0	1	0	7
60,001 & above	<u>1</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>0</u>	<u>10</u>
Total	120	120	120	120	120	60	660

Source: Compiled from sample data.

the number of properties which sold for less than \$5,000. The number sold in the \$5,000 to \$7,500 class remained fairly constant. The number of properties which sold for \$25,000 and over was too small to indicate a trend.

Like sale prices, average assessed values had been increasing over time. (Table 37) Fewer properties were assessed below \$5,000 and more were assessed in the \$5,001 to \$25,000 range.

Properties in good condition had been increasing as a relative number (Table 38). Properties in poor or obsolete condition were a declining segment of the total real estate market. This in part explained the rise of prices and assessed values over the five year period of the sample.

While properties in good condition increased over time, properties with lower "per cent good" diminished (Table 39). In the composition of the sample, older properties were decreasing relative to all properties. The average age of properties in the sample was twenty years. Over time, skewness in the distribution of "per cent good" was thought to be shifting from positive in 1958 to less positive in 1963, indicating a gradual shift in numbers of sales of property from older to newer properties and a decrease in the average age of properties.

The Time Lag of Vacant Lots

The ratio of assessed values to sale prices for nineteen vacant lots in the sample was 0.66, less than the ratios for all properties.¹

¹The ratio for commercial properties was 0.91 while the ratio for residences was 0.70.

TABLE 37

TOTAL ASSESSED VALUE OF 660 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY DATE OF SALE, 1958-1963

Assessed Value	Date of Sale						Total
	1958	1959	1960	1961	1962	1963	
\$ 0 - 5,000	39	33	31	41	31	22	197
5,001 - 7,500	16	25	18	11	36	6	112
7,501 - 10,000	17	21	26	27	12	15	118
10,001 - 15,000	22	14	20	17	19	5	97
15,001 - 20,000	9	12	9	14	14	4	62
20,001 - 25,000	6	2	4	4	3	3	22
25,001 - 30,000	4	7	6	2	2	2	23
30,001 - 60,000	6	4	4	3	0	3	20
60,001 & above	1	2	2	1	3	0	9
Total	120	120	120	120	120	60	660

Source: Compiled from sample data.

TABLE 38

THE DATE OF SALE OF 631 RESIDENTIAL AND COMMERCIAL STRUCTURES
IN THE CITY OF FORT WORTH, BY CONDITION, 1958-1963

Date of Sale	Good	Fair	Poor	Obsolete	Total
1958	85	6	14	7	112
1959	75	9	21	8	113
1960	77	14	20	9	120
1961	73	15	21	5	114
1962	97	7	11	1	116
1963	<u>43</u>	<u>2</u>	<u>9</u>	<u>2</u>	<u>56</u>
Total	450	53	96	32	631*

*The condition of 29 of the properties in the sample was not reported in the city tax office files.

Source: Compiled from sample data.

TABLE 39

THE "PER CENT GOOD" OF 632 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY YEAR OF SALE, 1958-1963

"Per Cent Good"	Year of Sale						Total
	1958	1959	1960	1961	1962	1963	
0 - 19	13	3	3	4	9	4	36
20 - 29	5	4	5	5	2	0	21
30 - 39	6	6	4	2	0	0	18
40 - 49	5	9	4	3	3	1	25
50 - 59	11	8	13	14	6	7	59
60 - 69	2	6	14	14	13	3	52
70 - 79	13	10	15	17	11	7	73
80 - 89	20	17	15	15	19	8	94
90 - 100	<u>46</u>	<u>45</u>	<u>36</u>	<u>42</u>	<u>57</u>	<u>29</u>	<u>255</u>
Total	121	108	109	116	120	59	633*

*27 of the properties in the sample were either vacant lots or the depreciation factor was not noted in the tax data.

Source: Compiled from sample data.

In the case of five of the nineteen lots, structures had been erected since the time of their last appraisal. The time differential was such that taxes were not paid on these properties for a period of four years at their improved level. The effect of this time lag was considerable when magnified to a possible 1 per cent of all properties in the City of Fort Worth.² The city had been losing a considerable amount of revenue by failing to adequately follow construction starts in the community. Certainly tax funds were set up in escrow by mortgage companies to approximate the value of the house when a mortgage was placed upon the house; the question remained whether or not the city recovered the lost taxes. In most cases, it did not.³

Shifts in Age

The rate of residential construction had increased since 1940 (Table 40). Four hundred and four, or 74 per cent, of the houses in the sample were built after 1940. The number of commercial properties increased over time but at a less rapid rate than was true for residential properties. Duplexes, for example, increased during the period at an increasing rate from 1890 until 1950. After the fifties, duplexes dropped off in numbers. Apartments increased until the thirties and had since dropped off. Commercial buildings had shown little growth among

²This was no way to measure the total number of properties which escaped the tax rolls.

³When the average deviation was computed for the actual vacant lots, it was \$4,293 or 37 per cent of the mean value of \$11,552. This indicated that there was relatively more dispersion present in the assessed value and sale price of vacant lots than for all properties.

TABLE 40

YEAR OF CONSTRUCTION OF 630 RESIDENTIAL AND COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY ZONING CLASSIFICATION

Year of Construction	Zoning Classification*						Total
	1	2	3	4	5	6	
1890-1899	3	0	2	0	2	0	7
1900-1909	11	2	3	4	5	2	27
1910-1919	12	2	3	3	3	2	25
1920-1929	62	4	5	2	2	0	75
1930-1939	34	6	4	0	4	1	49
1940-1949	123	11	2	2	4	5	147
1950-1959	267	7	2	2	3	3	284
1960-1963	14	0	0	0	1	1	16
Total	526	32	21	13	24	14	630#

*1 - One Family Residence

2 - Duplex

3 - Apartment

4 - Commercial Service

5 - Commercial

6 - Light Industrial

#Thirty of the properties in the sample were either vacant lots or the year of construction was not ascertainable from tax data.

Source: Computed from sample data.

real properties while light industrial structures appeared to be fairly stable. Broadly, residential building was increasing at a more rapid rate than was commercial building.

Application of Assessment Procedures Over Time

When built in different time periods, buildings, whether residential or commercial, exhibited different use of materials and construction methodology, causing difficulty in attempts to assess value adequately. Any property built for residential use after 1940 was fairly similar to most properties described by the structural classifications used by the appraisers. Houses built before 1940 showed differentiation in building materials and techniques which could have been a source of inequity in taxation.⁴

The largest number of commercial properties were built before 1940; of the 110 commercial properties, 60 per cent were built before 1940. To the property appraiser the spread in age of commercial buildings made them even more diverse than residences. With an increasing number of new materials available, the appraiser was confronted with the need for constant re-education. Old buildings presented further problems. Stone masonry, so common in the facades of older buildings, was no longer commonly used and yet the facade of older buildings still added commercial value. Here, as in the case of residences, it was concluded that a large number of changes in the techniques

⁴Some examples of changes in building data were: Prefabrication of structures was of recent origin. The use of plasterboard was widespread, causing an increased cost in plaster and lathe. Data on steel buildings (prefabricated) was being assimilated by the tax office into its procedures in 1963.

and materials of construction yielded different situations for the appraiser who attempted to determine the tax value.

The depreciation factor did not adequately measure the time factor (Table 41). The 660 properties used in the sample were categorized according to the decade in which the properties were built and the ratios of assessed value to sale price within these categories were computed. If the depreciation factor was adequate, there would have been less discrepancy among the ratios. This table was constructed so that under ideal circumstances each group of properties in the calculation for each decade should have had a sales ratio of one.

Although the depreciation factor was inadequate, the assessor was at least attempting to keep the assessments up to date. Eighty-six per cent of the properties in the sample were appraised after 1960 (Table 42). The high number of recent appraisals was unusual for most communities. To have had this many appraisals which were up to date indicated a better than average attempt on the part of the city assessor to pursue his task. Although precise figures were not known for other communities, an estimated average length of time between assessments for properties in most communities was fifteen years. In contrast to the City of Fort Worth, the Tarrant County taxing district had not had a complete reappraisal program since 1935.

Changes in Quality and Size

As the assessor attempted to value properties in a period of rapid change, he was faced with changes in the kind of property he

TABLE 41

RATIO OF ASSESSED VALUE TO SALE PRICE OF 630 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN THE CITY OF FORT WORTH
BY DECADE OF CONSTRUCTION*

Decade of Construction	Ratio of Assessed Value to Sale Price
1890-1899	.711
1900-1909	.786
1910-1919	.881
1920-1929	.798
1930-1939	.813
1940-1949	.827
1950-1959	.703
1960-1963	.853

*Thirty of the properties in the sample were either vacant lots or the date of construction was not ascertainable from tax data.

Source: Computed from sample data.

TABLE 42
YEAR OF APPRAISAL OF 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS

Year of Appraisal	Number of Properties
1954	4
1955	2
1956	3
1957	7
1958	46
1959	27
1960	175
1961	186
1962	204
1963	1
Unknown	5
Total	660

Source: Compiled from sample data.

assessed. The City of Fort Worth tax assessor used a series of structural classifications for buildings. Structural classifications of the 550 residential properties in the sample were segregated by the year of sale (Table 43 and Table 44). There was a decreasing number of small, cheaply constructed dwellings which had a typical space of 400 to 600 square feet. Above the 800 square foot categories there was an increase in number. While the number of structures increased in the middle ranges, the properties with 25,000 square feet or more were diminishing.

While the average size of residential properties was increasing, the size of commercial properties tended to increase. The number of small, cheaply constructed commercial properties was declining relatively (Table 45). Categories of property which increased were the average-to-large buildings of professional design. These buildings had an average size of 6,000 square feet. A fairly stable result in the sample was seen in the small-to-medium building of 1,200 square feet. This kind of building was not the most desirable from the standpoint of the community, but in many instances was the result of the work of individual small businessmen such as small grocers.

The quality of commercial structures had been improving over time (Table 46). The bulk of unattractive, cheaply constructed commercial structures, of a typical space of 600 square feet, were built before 1910. There were also a large number of shabbily constructed properties built during the 1940's but very few since then. The cheaply constructed, small commercial building had become a thing of the past.

The structural classifications used by the building appraisers in the City of Fort Worth will have to be constantly re-evaluated and

TABLE 43

STRUCTURAL CLASSIFICATION OF 550 RESIDENTIAL PROPERTIES
IN FORT WORTH, TEXAS, BY YEAR OF SALE, 1958-1963

Classification	Year of Sale					
	1958	1959	1960	1961	1962	1963
1. Small cheaply constructed dwelling; typical space: 400 square feet	6	4	1	2	6	0
2. Small cheaply constructed dwelling; typical space: 600 square feet	3	6	9	12	12	13
3. Small to medium averagely constructed dwelling; typical space: 800 square feet	24	29	26	25	25	14
4. Average dwelling, good construction; typical space: 1000 square feet	60	53	54	51	45	15
5. Average to large dwelling of good construction; typical space: 1600 square feet	4	7	6	6	8	7
6. Medium large dwelling of very good construction; typical space: 2000 square feet	1	0	0	2	2	1
7. Large dwelling of very good construction; typical space: 2500 square feet	0	0	0	1	2	0
8. Large dwelling of excellent construction; typical space: 3500 square feet	0	0	0	1	0	0
9. Not Reported	2	1	4	0	0	0
Totals	100	100	100	100	100	50

Source: Compiled from sample data.

TABLE 44

PERCENTAGE DISTRIBUTION OF STRUCTURAL CLASSIFICATION OF 550 RESIDENTIAL PROPERTIES IN FORT WORTH, TEXAS, BY YEAR OF SALE, 1958-1963

Classification	Year of Sale					
	1958	1959	1960	1961	1962	1963
1. Small cheaply constructed dwelling; typical space: 400 square feet	6	4	1	2	6	0
2. Small cheaply constructed dwelling; typical space: 600 square feet	3	6	9	12	12	26
3. Small to medium averagely constructed dwelling; typical space: 800 square feet	24	29	26	25	25	28
4. Average dwelling, good construction; typical space: 1000 square feet	60	53	54	51	45	30
5. Average to large dwelling of good construction; typical space: 1600 square feet	4	7	6	6	8	14
6. Medium large dwelling of very good construction; typical space: 2000 square feet	1	0	0	2	2	2
7. Large dwelling of very good construc- tion; typical space: 2500 square feet	0	0	0	1	2	0
8. Large dwelling of excellent construc- tion; typical space: 3500 square feet	2	1	4	1	0	0
Totals	100	100	100	100	100	100

Source: Compiled from sample data.

TABLE 45

STRUCTURAL CLASSIFICATION OF 110 COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, BY YEAR OF SALE, 1958-1963

Classification	Year of Sale						TOTAL
	1958	1959	1960	1961	1962	1963	
1. Small, light, unattractive cheaply constructed building with poor workmanship and design; typical space: 600 square feet	6	5	9	5	1	1	27
2. Small to medium building of fair materials, design and workmanship; typical space: 1200 square feet	6	5	2	7	8	4	32
3. Average size building of good materials, workmanship and design, attractive appearance; typical space: 2500 square feet	4	3	5	2	6	1	21
4. Average to large building of good materials, construction and professionally designed, attractive in appearance; typical space: 6000 square feet	1	2	3	3	4	3	16
5. Not Reported	3	5	1	3	0	2	14
Totals	20	20	20	20	19	11	110

Source: Compiled from sample data.

TABLE 46

YEAR OF CONSTRUCTION OF 93 COMMERCIAL STRUCTURES IN FORT WORTH, TEXAS,
BY STRUCTURAL CLASSIFICATION, 1958-1963

Year of Construction	Classification*				Total
	1	2	3	4	
	<u>Aggregate</u>				
1890-1900	12	4	2	0	18
1900-1910	5	3	2	1	11
1910-1920	1	5	2	1	9
1920-1930	0	2	7	5	14
1930-1940	4	11	5	2	22
1940-1950	1	4	5	6	16
1950-1960	1	0	0	1	2
1960-1963	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
Totals	<u>25</u>	<u>29</u>	<u>23</u>	<u>16</u>	<u>93#</u>
	<u>Percentage Distribution</u>				
1890-1900	12.9	4.3	2.1	0.0	19.3
1900-1910	5.4	3.2	2.1	1.1	11.8
1910-1920	1.1	5.4	2.1	1.1	9.7
1920-1930	0.0	2.1	7.5	5.4	15.0
1930-1940	4.3	11.8	5.4	2.1	23.6
1940-1950	1.1	4.3	5.4	6.5	17.3
1950-1960	1.1	0.0	0.0	1.1	2.2
1960-1963	<u>1.1</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>1.1</u>
Totals	<u>27.0</u>	<u>31.1</u>	<u>24.6</u>	<u>17.3</u>	<u>100.0</u>

*For structural classification see Table 45.

#Seventeen of the commercial structures could not be identified by both the year of construction and by structural classification.

Source: Compiled from sample data.

restructured. A re-evaluation will be necessary in order to keep the structural classifications applicable to building techniques employed in the city.

Average Deviation Measures

The average deviation was computed for the 660 properties according to the year in which they were appraised (Table 47). The primary pattern of this table was revealed in the column where the average deviation was computed as a percentage of the mean of the sale price of the various years. In an ideal situation, these percentage figures should all be zero, indicating that there was no variation of assessed values from sale prices. As it was, the larger the percentage figures, the more variation was present. Beginning with the years before 1956, the average deviation was 31.7 per cent. Properties were assessed under the old appraisal program from 1956 through 1960. Properties in 1961 and 1962 were included in the new appraisal program. The trend of the average deviation of assessed value from sale price resulted in a decreased variation. The reason was the improved methodologies of the reappraisal program. Another factor was that the decreasing variation was caused by the clustering of properties around an average type. The assessment of property should improve as a result of this increasing similarity among real estate properties.

The average deviation measures suggested that the current reappraisal program was more effective than older programs.⁵ The reason was that, on the average, the new assessments were closer to the sale

⁵The ratios computed in Chapter IV suggest this also. See Table 30, page 93.

TABLE 47

AVERAGE DEVIATION OF ASSESSED VALUE FROM SALE PRICE OF 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY YEAR APPRAISED

Year Appraised	Average Deviation	Mean of Sale Prices	Average Deviation As a Per Cent of Mean Sale Price
1956	\$2,490*	\$ 7,850	31.7
1957	2,434*	6,764	35.9
1958	2,504*	8,701	28.8
1959	2,782*	9,054	30.7
1960	3,274*	12,170	26.9
1961	2,743	15,343	17.9
1962	6,041	21,684	27.9

*The average deviation figures for these years are adjusted to make them comparable with the figures for 1961 and 1962. The variation for these years was reduced because the properties appraised before 1960 were done so at 55 per cent of market value.

Source: Computed from sample data.

prices than was true in older programs. The average deviations for 1961 and 1962 were less than the average deviations prior to these years, with the exception of 1960.

Correlation Analysis

A lagged regression was run between sale price and assessed value. The items used for the regression were properties which had been sold prior to their date of appraisal. An effort was made to determine if this regression would produce higher or lower correlation than the first correlation of the sales data and assessed values. In the first instance, the coefficient of correlation was 0.935; in the lagged regression, the result was 0.942. Thus, slightly higher correlation existed between sale prices correlated with the assessments made after the sale date. The similarity of the coefficients indicated that there was no consistent use of sales data in assessments.

Another correlation was made on the date appraised and structural classifications; in this case, the coefficient of correlation was low, at 0.111. It was not the practice of appraisers to assess properties, en masse, of the same size. It might be suggested that the appraisal process would be improved if properties of similar size within the use categories were assessed together.

Time Periods in Property Assessment

A concept of short run and long run can be developed for property assessment. The long run can be defined as the period in which the methodology of appraisal becomes inadequate due to external changes in

the character of the properties. The short run for assessment could be characterized as the period during a reappraisal cycle. Short run problems are those which are present inadequacies in the given method of appraisal and its application during the period of reappraisal.

Over time, short run problems could be taken care of by improvements in the staff and in the use of the methodology currently available, to arrive (within the limitations of that methodology) at a more equitable application of the property tax. On the other hand, the long run problem involves external changes in the community over time which reduce the effectiveness of any given assessment procedure, no matter how well it is applied.

Although scant changes were contemplated in city staff and personnel, a great many discrepancies in property taxation in the short run could be diminished by improving and expanding the assessment staff. The long run problems of the changes in methodology were more difficult to correct. The reason for this difficulty was that technology in the building industry changed over time and it was difficult for the property tax assessor to let changing technology be reflected in his appraisal methodology.

Summary

In Chapter V, the variation which existed between assessed value and sale price was analyzed according to time elements. The most important pattern over time was the tendency of the properties in the assessor's district to cluster around central figures. Standardization in technology was noted as one possible source for this change.

Time lags in the assessment of properties were noted in the analysis of vacant lots. Inequities herein were shown to be caused by the fact of taxation of land as vacant lots, whereas structures existed on several of them. Almost 1 per cent of the total sample fell into this category.

Changes which created problems for the assessor included the range of years of construction, varying from 1896 to 1963. This spreading age of properties indicated that assessment procedures applied to older properties were not adequate for newer properties. The saving fact of this entire problem was that within the past few years, when building permits were at a fairly flat 70 per cent of the 1947 activity level, the assessor found within his district an increasing number of properties of similar type. This similarity was reflected in the improving ratios over time.

Commercial and residential properties in good condition were increasing and commercial properties of larger types were increasing in number. Differences in style and use of commercial properties may become greater, so it could be concluded that the appraisers should have more difficulty appraising commercial structures in the future, while the residential market should become easier to appraise.

Finally, the correlation analysis by lagged regression appeared to indicate that sales data were not used to a great extent in the appraisal of properties. The correlation of appraised value and sale prices in this case was similar to the initial correlation between these two series.

Long run and short run problems in the assessment of real estate may be summarized as follows:

Long run changes in the assessment data: (1) A tendency toward a larger relative number of newer properties. An upswing in building activity reached a peak in Fort Worth in 1956 and was still falling in 1963. During this declining period, it would be expected that the average age of properties would increase slightly. During an expansion of building activity, average age will decrease. (2) A clustering of properties' sale prices around the mean price during a period of decline and a wider dispersion when an expansion in building activity returns. (3) An increase in the size of the mean of sale prices at a slow rate during a declining period of building activity and a more rapid rate of increase during a period of expanded building activity. (4) An increase in standardization of building techniques causing a greater similarity of residential structures over time.

Short run problems which are dependent upon the method of assessment include: (1) A failure to consistently use sales data; (2) A failure to similarly prepare assessment appraisers; (3) An insufficient staff; (4) Insufficient methodology--not a sufficient number of value factors, such as the depreciation factor; (5) A failure to consistently use the given methodology.

In conclusion, no matter how adequate the methodology of assessment is in the short run, the overview of assessment will demand a use of long run trends in the community as modifying factors. Until long run trends are included in assessment procedures, equity of assessment will be difficult.

CHAPTER VI

THE EFFECT OF USE

In 1960, there were 145,000 individual parcels of real property in the City of Fort Worth. It was estimated that about two-thirds of the properties were residential, while one-third were commercial and industrial.

The point of inquiry in this chapter was to determine whether or not the use to which a property was put influenced the variation that existed between the sale prices of properties and their assessed values.

Patterns in Zoning

Zoning had an impact upon the value of properties, as well as their sale prices. A look at various crossclassifications surrounding zoning categories revealed some of these variations.

Zoning of Commercial Properties

Most commercially zoned properties in the sample were duplexes and apartments (Table 48). Forty-nine of the 110 commercial properties were zoned within these categories. Twenty-five of the commercial structures were zoned as duplexes. Twenty-two were actually used as duplexes while one was a vacant lot and the other two were single-family residences. There were twenty-four apartments in the sample.

TABLE 48
 ZONING CLASSIFICATION OF 110 COMMERCIAL PROPERTIES
 IN FORT WORTH, TEXAS, 1958-1963

Zoning Classification	Number of Properties	Per Cent
Two Family Dwellings	25	22.7
Apartments	24	21.9
Commercial Services	14	12.7
Commercial	27	24.5
Light Industrial	20	18.2
Heavy Industrial	0	0.0
Total	110	100.0

Source: Computed from sample data.

Twenty-three were actually used as apartments. The remaining one was used as a single-family residence. There were fourteen properties zoned for commercial services. The term "service" referred to establishments designed primarily for use in consumer services such as laundries, dry cleaning establishments, and television repair shops. All of the properties so zoned were actually used in this manner. There were twenty-seven standard commercial properties in the sample. All were actually used for commercial purposes.

There were no heavy industrial properties in the sample, but there were twenty light industrial properties. All were employed for light industrial or warehouse purposes. Heavy industrial property zonings were clustered in various parts of the city. The turnover of these properties was small, relative to sales of other properties.

Zoning of Residential Properties

Technically, all of the residences in the sample were used according to zoning requirements. One example of an abuse of the zoning ordinances was the use of "servants quarters" as income property. This abuse actually meant multi-family or two-family use of the single-family residences involved, but the number of properties in this category was difficult to determine. For example, in one block zoned one-family residential, four of the six pieces of property had servants quarters in the rear.

Assessment Ratios by Zoning

Ratios of assessed value to sale price were computed for six zoning classes of property. The ratios ranged from a low of 0.68 for

apartments to highs of 0.99 for commercial and 1.03 for light industrial properties (Table 49). Data in the sample suggested that assessed values of all classes of business property were closer to market values than was true of apartments and residential properties. One of the reasons was that most business properties had been reappraised under the new program, while many residential properties had not. Another reason for the higher commercial ratios was a relative decline of sale prices among some commercial buildings in the community.

Patterns in Use

Variations in assessed value and sale price occurred in properties used in different ways. Many of these variations were significant.

Assessment Ratios by Use Type

One-family residences, which accounted for 542 pieces of property in the sample, were assessed at 90 per cent of their sale prices (Table 50). Two-family residences were assessed at 78 per cent of their sale prices, while apartments averaged only 71 per cent. A few properties in the central business district were assessed at more than 100 per cent of their sale price. The main reason for this overassessment was that retail sales in the central business district had lagged behind retail sales in the newer shopping centers, causing a decline in the value of the property. In some cases the appraisers did not take this decline in value into account, with a resulting overassessment.

TABLE 49

RATIO OF ASSESSED VALUE TO SALE PRICE OF 660 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY ZONING CLASSIFICATION, 1958-1963

Zoning Classification	Ratio
1. One Family Residential	.706
2. Two Family Residential	.709
3. Apartment	.675
4. Commercial Services	.750
5. Commercial	.986
6. Light Industrial	1.028

Source: Computed from sample data.

TABLE 50

RATIO OF ASSESSED VALUE TO SALE PRICE FOR 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY USE TYPE, 1958-1963

Use Type	Number in Sample	Ratio of Assessed Value to Sale Price
One Family Residence	542	0.90
Two Family Residence	22	0.78
Apartment	23	0.71
Store	15	0.94
Service Station	3	0.54
Public Garage	2	0.78
Large Office Building	1	1.18
Hotel	1	0.44
Factory	1	0.80
Warehouse	5	0.94
Small Office	9	1.13
Store and Small Office	1	1.10
Store and Hotel	4	1.12
Store and Public Garage	1	0.67
Parking Lot	3	0.83

Source: Computed from sample data.

Condition and Quality of Commercial Properties

Most commercial properties in the sample were in the fair, poor, and obsolete categories (Table 51). Only 37 per cent were in good condition. They varied in quality from very lightly constructed and unattractive buildings to solidly constructed, professionally designed ones. They ranged in size from about 600 to 6,000 square feet (Table 52).

The condition of commercial properties conformed to the quality and size of the structures (Table 53). A cheaply constructed property was usually in poor condition. Most buildings of high quality structural classification were in good condition. Properties of average size and good quality were also usually in good condition. Sixty-five per cent of the commercial properties were professionally designed with an average size of approximately 2,500 to 6,000 square feet. They were constructed of good materials and with good workmanship.

Condition and Quality of Residences

The condition of residential properties correlated highly with structural classification (Table 54). In other words, the better the quality of construction, the better was the condition of the property. In this case "one" was the lowest quality classification whereas "eight" was the highest quality.¹ Most residences were in the "four" classification, average dwellings of good construction with a typical floor space of 1,000 square feet. Of these properties, 190 were in good condition and only one was in obsolete condition, indicating that properties

¹See Table 44, p. 123.

TABLE 51
PHYSICAL CONDITION OF IMPROVEMENTS OF 110 COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Physical Condition	Number of Structures	Per Cent
Good	41	37.2
Fair	17	15.4
Poor	22	20.0
Obsolete	21	19.0
Not Reported	9	8.4
Total	110	100.0

Source: Compiled from sample data.

TABLE 52
STRUCTURAL CLASSIFICATION OF 110 COMMERCIAL PROPERTIES
IN FORT WORTH, TEXAS, 1958-1963

Classification	Number of Properties
1. Small, light, unattractive cheaply constructed building with poor workmanship and design; typical space: 600 square feet	27
2. Small to medium building of fair materials, design and workmanship; typical space: 1,200 square feet	32
3. Average size building of good materials, workmanship and design, attractive appearance; typical space: 2,500 square feet	21
4. Average to large building of good materials, construction and professionally designed, attractive in appearance; typical space: 6,000 square feet	17
5. Not Reported	13
Total	<u>110</u>

Source: Compiled from sample data.

TABLE 53
 CONDITION OF 110 COMMERCIAL ZONED PROPERTIES IN
 FORT WORTH, TEXAS, BY COMMERCIAL CLASS

Condition	Commercial Class*					Totals
	1	2	3	4	Not Reported	
Good	5	16	10	10	0	41
Fair	0	3	6	5	3	17
Poor	5	10	5	2	0	22
Obsolete	17	2	0	0	2	21
Not Reported	0	1	0	0	8	9
Total	27	32	21	17	13	110

*See Table 52 for classification.

Source: Computed from sample data.

TABLE 54

CONDITION OF 492 RESIDENTIAL STRUCTURES, BY RESIDENTIAL CLASS,
1958-1963

Condition	Class*								Totals
	1	2	3	4	5	6	7	8	
Good	9	40	77	190	23	3	1	0	343
Fair	1	5	5	26	5	0	0	0	42
Poor	8	20	19	29	3	1	0	0	80
Obsolete	18	4	4	1	0	0	0	0	27
Total	36	69	105	246	31	4	1	0	492#

*The structural classification of 550 residential properties in Fort Worth is as follows:

1. Small cheaply constructed dwelling; typical space: 400 square feet
2. Small cheaply constructed dwelling; typical space: 600 square feet
3. Small to medium averagely donstructed dwelling; typical space: 800 square feet
4. Average dwelling, good construction; typical space: 1,000 square feet
5. Average to large dwelling of good construction; typical space: 1,600 square feet
6. Medium large dwelling of very good construction; typical space: 2,000 square feet
7. Large dwelling of very good construction; typical space: 2,500 square feet
8. Large dwelling of excellent construction; typical space: 3,500 square feet

#The condition or class of 58 of the properties could not be determined from tax data.

Source: Computed from sample data.

of average size and quality were usually in good condition. Of the 492 properties included in this table, 343 were in good condition.

Properties in poor condition were of average quality or below. Eighteen of the twenty-seven properties in the obsolete category were of cheap construction, with an average space of about 400 square feet. Hence, the quality of construction of residential buildings correlated highly with the condition in which they were found. In many instances it appeared that the appraiser's judgment of condition was biased by the quality of construction of the property.

Zoning and Condition

Certain uses of property required that they be in good condition. For example, one-family residences usually had to be in good condition, whether they were rented or purchased. The same requirement held true for duplexes, which depended upon high rates of occupancy for profitability. About 80 per cent of the one-family residences and 67 per cent of the duplexes were in good condition (Table 55). On the other hand, most of the apartments in the sample were in deteriorating or transitional neighborhoods and were rented at low rates. Half of the apartments were in poor or obsolete condition.

More than half of the commercial service properties were in poor or obsolete condition, but more than half of the commercial and light industrial properties were in good or fair condition. The evidence seemed to indicate that when a consumer was making a purchase in person--whether it be rental property, a house, or store--the property had to be in relatively good condition.

TABLE 55

ZONING OF RESIDENTIAL AND COMMERCIAL PROPERTIES BY PHYSICAL
CONDITION IN FORT WORTH, TEXAS

Zoning	Good	Fair	Poor	Obsolete	Not Reported	Totals
One Family Residence	429	36	73	12	0	550
Duplex	18	2	6	1	0	27
Apartment	4	7	5	7	1	24
Commercial Service	4	1	5	4	0	14
Commercial	8	5	4	6	4	27
Light Industrial	<u>7</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>18</u>
Total	470	53	95	33	9	660

Source: Computed from sample data.

Taxes and Use

In 1962, many of the houses in the sample were taxed at less than \$100 per year (Table 56). The properties which were zoned for one-family dwellings numbered 550. Of these, 47 per cent were taxed at \$100 or less. Sixty-six per cent of the total sample were taxed at \$300 or less per year. Of the total number of properties within this zoning category, only two properties were taxed at \$1,100 a year or more.

The largest number of duplexes were taxed at \$100 or less per year. All duplexes were taxed at less than \$500 per year. There were twenty-four apartments and fourteen of these were taxed at \$100 or less.

In the "commercial service" zoning, five of the fourteen properties were taxed at \$100 or less whereas two were taxed between \$1,600 and \$2,000 a year.

In the "standard commercial" category, the taxes on a large number of the properties were quite high. Two of the properties were taxed \$4,000 a year or more whereas five of the properties were taxed between \$1,600 and \$2,000. Within the five category most of the stores (and office buildings combined with stores) were found. The three properties which were taxed less than \$100 a year were obsolete structures.

In the light industrial category, there were eighteen properties in the sample and the bulk of these properties were taxed relatively small amounts. One of these properties was taxed at \$4,000 whereas the tax on the rest of the light industrial properties was considerably less.

TABLE 56

TAXES PAID IN 1962 by 660 RESIDENTIAL AND COMMERCIAL
PROPERTIES IN FORT WORTH, TEXAS

Taxes Per Year	Zoning*							Total
	1	2	3	4	5	6	7	
\$ 0 - 100	261	16	14	5	3	1	0	300
100 - 200	106	3	3	0	3	3	0	118
200 - 300	69	4	1	1	1	2	0	78
300 - 400	27	2	3	0	4	0	0	36
400 - 500	34	2	3	2	1	3	0	45
500 - 600	22	0	0	0	2	1	0	25
600 - 700	10	0	0	1	0	1	0	12
700 - 800	12	0	0	0	2	1	0	15
800 - 900	4	0	0	1	0	0	0	5
900 - 1,000	2	0	0	1	0	1	0	4
1,000 - 1,100	1	0	0	1	0	2	0	4
1,100 - 1,200	0	0	0	0	1	0	0	1
1,200 - 1,300	2	0	0	0	1	1	0	4
1,300 - 1,600	0	0	0	0	2	0	0	2
1,600 - 2,000	0	0	0	2	5	1	0	8
2,000 - 4,000	0	0	0	0	0	0	0	0
4,000 & above	0	0	0	0	2	1	0	3
Total	550	27	24	14	27	18	0	660

*Zones are:

1. One Family Residential
2. Two Family Residential
3. Apartment
4. Commercial Service
5. Commercial
6. Light Industrial
7. Heavy Industrial

Source: Compiled from sample data.

Average Deviations

An average deviation was computed for the properties in the sample according to their physical condition, from good to obsolete (Table 57). For properties in good condition the average variation was \$4,798 from the mean sale price of \$14,854, or 32 per cent. The greatest variation was in the fair condition group. The average deviation was greater (\$7,517) among this group of properties whose average sale price was about \$18,000.

Properties in poor condition showed a small amount of variation. Except for properties in good condition, properties in poor condition were less difficult to assess than properties in the other categories. The appraisers had most difficulty in adequately appraising properties which fell in fair and obsolete condition.

When the average deviations of assessed value from sale price were computed among zoning categories, the greatest amount of variation was found to exist among apartment houses (Table 58). The apartment houses tended to appreciate or depreciate according to what took place in the market for both residential properties and commercial properties. As of 1963, apartment houses were probably the least desirable kind of property to own. Large scale operators in rentals preferred commercial buildings. Thus, the apartment houses suffered. On the other hand, speculative buyers of residential properties in Fort Worth appeared to prefer foreclosed single-family residences from the Federal Housing Administration. Low income apartment houses were more sensitive to the market than were other types of property.

TABLE 57

AVERAGE DEVIATION OF ASSESSED VALUE FROM SALE PRICE OF 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY CONDITION, 1958-1963

Condition	Average Deviation	Mean of Sale Price	Average Deviation As a Per Cent of Mean Sale Price
Good	\$4,798	\$14,854	32.3
Fair	7,517	18,295	41.1
Poor	4,271	13,177	32.4
Obsolete	4,167	11,173	37.3

Source: Computed from sample data.

TABLE 58

AVERAGE DEVIATION OF ASSESSED VALUE FROM SALE PRICE OF 660 RESIDENTIAL
AND COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS,
BY ZONING CLASSIFICATION, 1958-1963

Zoning Classification	Average Deviation	Mean Sale Price	Average Deviation As a Per Cent of Mean Sale Price
1. One Family Residential	\$ 4,404	\$13,557	32.5
2. Two Family Residential	3,459	9,385	36.9
3. Apartment	4,604	11,410	40.4
4. Commercial Services	9,650	34,986	27.6
5. Commercial	11,468	42,487	27.0
6. Light Industrial	9,754	34,710	28.1

Source: Computed from sample data.

Variation of two-family dwellings was almost as high as that of apartments. Market choices for real estate appeared to be somewhat against the apartments and duplexes. This disadvantage in the market accounted for the wide variation present in the assessed values and the sale prices of apartments and duplexes.

The values of commercial properties were more closely matched to sale prices than were the rental dwellings. The reason for this closeness of assessed value and sale price was that many of the commercial properties in the sample were located in the central business district and suffered in sale price to a lesser degree; therefore, the decline in price was met by a slight increase in assessed values.

One-family residences fell between the two aforementioned categories. The ratio of 32.5 was less than that for duplexes and apartments and greater than that for the more obvious commercial types of property.

Overassessment and Underassessment of Properties

Five hundred and seventy of the properties were underassessed (Table 59). Only in two cases were properties assessed at their precise sale price. Eighty-eight of the properties were overassessed.

Forty-three per cent of all the commercial properties were overassessed. Within the zoning categories, the highest relative number of overassessed properties were light industrial properties. Of all commercial properties, most of those overassessed were in the Old City addition, the central business district of the community. In this group were properties of both high and low value. Most of the properties were of average size and fair quality. The average age of this group of commercial

TABLE 59

THE OVERASSESSMENT OR UNDERASSESSMENT OF 658 RESIDENTIAL AND
COMMERCIAL PROPERTIES IN FORT WORTH, TEXAS, 1958-1963,
BY ZONING CATEGORY

Zoning	Overassessed	Underassessed	Total
One-family Residential	51	497	548
Two-family Residential	6	21	27
Apartment	5	19	24
Commercial Services	4	10	14
Commercial	11	16	27
Light Industrial	11	7	18
Total	88	570	658*

*Two of the properties were actually assessed at their sale price amount.

Source: Compiled from sample data.

properties was thirty-six years while the average age of properties which were underassessed was thirty-two years. Overassessed commercial properties were therefore of a varying sale price, had a relatively high age, and were located in the central business district and its environs.

The central business district was shown in Chapter II to have had an increase in retail sales at a level of about 1 per cent a year while sales in other commercial areas of the community (the suburbs) were growing at a rapid rate. This relative stagnation in retail sales accounted for the fact that sale prices of the commercial properties in the central business district were increasing only slightly while the advancing reassessments tended to increase the valuation.

Residential properties were not overassessed as often as were commercial properties. About 10 per cent of the residential properties were overassessed. Residential properties which indicated the greatest amount of overassessment were properties which sold for \$5,000 or under.² These properties were of small size and poor quality. Most of these properties were in older residential areas of the city where prices tended to have fallen. Part of the reason for the overassessment was due to the sluggish real estate market as reflected in the slowed building of houses in the community for the six years prior to 1963. In such a market, the older houses could not be sold as readily for high prices due to competition from alternatives. These alternatives, like the total market, were forced lower because of competition of a large number of new homes which cleared the market at reduced prices. Other

²See Table 22, page 74.

aspects which illustrated reductions in price were financing arrangements which tended to bias the market against older houses.

Summary

In Chapter VI use, as a source of variation between sale price and assessed value, was examined. About three-fourths of the properties were one-family residences, and the other one-fourth were of commercial uses. Variations were discovered in the ratios of assessed value to sale price among these properties. The closest correspondence between assessed value and the sale price was found to be that of the standard commercial zoning category. The ratios for commercial categories generally displayed a closer relation to sale price than did the ratios for residential properties.

Standardization of construction methods and materials caused closer assessments. The assumption of standardization was based on a clustering around averages, and there logically should be more relative variation among residences as a group than among commercial properties of differing use types. Certainly, the prices of commercial properties presented a wider range, but within relevant ranges, the commercial properties were more capable of being categorized in certain fixed structural groups than were residences. For example, there were four types of structural classifications for commercial properties while there were eight types of classifications for residences.

Another argument for standardization among commercial properties was the size of the buildings. Thus, a "two" commercial class building was not in any way mistaken for a "three" which had twice the space.

For residential properties, shades of difference between the structural classes were much less obvious to the appraiser.

The use to which a property was put made a difference in the final valuation. In the case of residential housing, the number of similar properties had its advantages for the assessor. On the other hand, these similarities were often misleading.

Another aspect of difficulties of assessment of use types came from the difficulty on the part of the appraisers in measuring social values of neighborhoods and their relative advantages. These were factors which were more in evidence in the assessment of residential properties than in commercial properties as indicated by the variation differential.³ The value of business property was calculated with considerable care, whereas the assessment of houses was calculated by an appraiser who may have had a more fixed notion about the value of housing. It was likely that familiarity bred contempt in this case, and the appraiser, since he rented or owned his home, was more apt to believe that he knew more about housing costs than he did. Further, the appraiser would have had less experience with commercial properties and would have been less willing to depend upon his own judgment.

Fifteen per cent of all of the properties were overassessed. Of this amount, most were commercial properties. Only about ten per cent of all of the residential properties were overassessed.

Use type was a category that, probably more than any other, reflected the intangible values of real estate. Obviously, use type was

³If these were reflected noticeably, it was in the price of vacant land, where prices for residential lots may vary from a few hundred dollars to several thousand.

not the simple notation on a tax card. It was more than that; the marking of the section on use type had to be symbolic of a differing set of values attached to residential properties than the values attached to commercial properties.

What appeared to take place in assessment in the previous analysis suggested that "use value" was not separate from "exchange value." Use value in the case of the 660 properties implied the economic factor of obsolescence which the city did not attempt to quantify in the assessment of real properties. By contrast, replacement cost of structures implied nothing with regard to use; therefore, it could be argued that the market value in most cases was a better approximation of the value of properties than the assessed value calculated by the tax department.

CHAPTER VII

SUMMARY AND CONCLUSIONS

In 1961, the property tax accounted for almost 90 per cent of all city government revenues in the United States. Most of the revenues came from taxes on real estate, but 14 per cent of the 90 per cent came from other sources such as tangible and intangible personal property. In Fort Worth, about one-half of the revenues in 1961 were generated by the property tax; 15 per cent of this amount came from personal property.

Because of the importance of the property tax as a source of revenue the purpose of this study was to isolate problem areas in the real estate assessment process. The principal method of study was to measure variations which existed between assessed value and sale prices of real estate. The quality and quantity of this variation was examined in a sample of 660 real properties in Fort Worth, Texas.

The sample came from a population of 12,000 properties which were sold during the period 1958 to and including 1963. The sample was derived from tax records, deeds, records of real estate brokers, mortgage records, and newspapers. Each sale was verified to insure that it represented "fair market value." Data for each property were put on punch cards for analysis.

The most important conclusion reached is that time factors, use factors, and the errors of human judgment are primary reasons for the inequitable nature of the property tax. Because of these three factors,

serious inequities arise even when the tax is administered in a highly competent manner as ~~it~~ is in Fort Worth.

Each of the three factors created problems in the assessment process. The problem of time was one of rapid changes in the composition of commercial and residential property in the community. Data used for assessment were constantly changing, with the result that it was necessary to keep the methodology of assessment up to date. The second problem was that properties of various use types demanded different methods of assessment. Although the use or utility of a property affected its value, utility factors were difficult to measure. Since a clear theory in regard to equity was lacking in the property tax, methods applied to various kinds of property did not render equitable results. The third problem of assessment was human judgment, expressed in terms of the inability of the appraisers to attain comparable valuations on comparable properties.

Because of the significant differences in appraisal work resulting from the three factors described above, it must be concluded that the market price of properties is normally the most suitable estimate of value available for tax purposes. Market value as an estimate comes closest to what the law demands when it obliges assessors to appraise property at its "fair market value."

Characteristics of the Sample of Real Property in the Community

The distribution of sale prices of properties in the sample was skewed positively. Consequently, a large number of these properties

were sold at prices below the mean price of \$14,874. The data indicated that 84 per cent of the properties sold for less than \$20,000. The largest single category of property sales was the \$5,001 to \$10,000 class, which included 34 per cent of all properties.

Three out of four of the properties in the sample were of frame construction. Most of the commercial properties were in poor or obsolete condition while most of the residential properties were in good condition.

Most of the properties were assessed at less than the mean assessed value of \$11,424. The median assessed value was \$8,320. Eighty-nine per cent of all properties were assessed at less than \$20,000

Human Error in Assessment: Conclusions and Suggestions for Their Correction

The quality of assessments of real estate made by city officials in Fort Worth was above average. The ratios of assessed value to sale price (0.71) consistently ran higher than was true nationwide (0.30). This difference in ratios lost some of its significance because, although Fort Worth assessed at 100 per cent of market of market value, state and local governments often assessed at less than 100 per cent of market value. The average ratio in Texas was 0.16 while ratios of most communities in Texas were between 0.05 and 0.60.

Although of high quality, the assessments suffered from certain difficulties. First, once a depreciation per cent was established, the per cent was not changed until the property was reassessed, perhaps as much as nine years later.

Second, the high use of per cents which were increments of five (such as 35 per cent, 40 per cent, and 50 per cent) suggested that the depreciation per cent was estimated by the appraiser rather than selected from the depreciation table. From this table it is possible to select a precise "per cent good" figure for each year of life of every type of property.

Another difficulty was discovered when the ratios of assessed value to sale price, by sale price level, were calculated. The ratios were closest to unity among properties in the \$5,001 to \$20,000 price range. Properties which sold for less than \$5,001 and more than \$20,000 were not assessed as close to unity. Similarity among properties and the existence of large numbers of properties in the \$5,001 to \$20,000 range of prices caused these properties to be assessed closer to sale prices.

When ratios of assessed value to sale price were computed for the properties according to who assessed them, the range was very large, from 0.32 up to 1.35. On the other hand, the median ratio was 0.92. The appraisers usually assessed at less than market value. This practice suggested that not all of the appraisers followed acceptable procedures.

A fifth difficulty existed in land valuations. The ratio of land value to sale price was lowest in the \$10,001 to \$15,000 range. Land value ratios of less expensive properties and more expensive properties were higher than ratios in the middle range.

As of 1963, some of these difficulties were being corrected. The ratios of assessed value to sale price by year of appraisal revealed that the average ratio for the years of the reappraisal program was slightly higher than for years prior to the program.

The analysis of the previous problems led to the following conclusions and suggestions:

One reason for variations of assessment among appraisers was the lack of a satisfactory definition of "good" and "fair" condition. These terms could have been defined for individual use types of property.

Second, the city did not appear to employ a sufficient number of appraisers. As of 1963, a field appraiser had to average twenty-five to thirty appraisals a day to maintain the reappraisal goal; this heavy load led to inequitable, hasty evaluations.

Another source of variation of assessments among the appraisers is a lack of specialization. Perhaps consideration might be given to the suggestion that appraisers be trained to deal with limited types of properties so that an appraiser would become a specialist in one type of property. Appraisers might be limited to dealing only with certain use types of property such as factories, retail stores, office buildings, or certain zoning categories.

Formal training might aid the appraisers in doing comparable work. Most academic institutions offer some type of formal training in real estate appraisal. It might be helpful for appraisers to take formal courses in real estate, economics, and statistics. Such training might tend to eliminate the flexibility in interpretation of the methodology by the appraisers which cause wide fluctuation in assessment levels. Since elimination of a portion of the judgmental variances is desirable, perhaps, the appraising function should be as automatic as possible; then the appraiser would be more a collector of the necessary data than an estimator of value. It is inefficient for the trained

appraiser to do clerical work. He could collect the information and the assessment value could be computed centrally.

Although the reappraisal program was an improvement over the older program, the differences in the average ratios was not particularly great. Any improvement in the new program was a result of an improved tax card and the improved appraisal manual. Changing the tax card and the appraisal manual did not greatly alter the replacement cost technique already in use, because the appraisers probably interpreted the new manual in terms of their past practices. The result was that no material changes in practice occurred in the new reappraisal program. This reticence to change on the part of the appraisers fortified the need for consistent formal training for all appraisers.

Time Factors: Conclusions and Suggestions
for Their Correction

Time factors caused changes in the data and method of assessment. The changes were of two types. One was based on the distinction of changes which were external to the individual properties. The second was changes which were internal to individual properties. External changes usually took place in the long run. Long-run changes included deterioration of the neighborhood and rezoning.

Internal changes to properties (such as remodeling, etc.) occurred in the short run. A short run of property assessment was suggested as the period in which the cycle of reappraisal took place; in Fort Worth, this period usually ran from four to six years.

One short-run pattern in assessment data was the tendency of assessed values of properties to cluster around mean sale figures. Standardization in building technology and materials contributed to this pattern. Over a time, the relative number of properties in good condition had been increasing, while properties in poor or obsolete condition were diminishing.

Short-run time lags in the assessment of properties were noted in the analysis of vacant lots. One per cent of the sample were taxed as vacant land, although there were structures on the land. The properties in this group were taxed as vacant land because the assessments were made prior to the building.

Though most of the properties were constructed after 1940, the long-run problem of assessment was that procedures applied to older properties were not suitable for newer properties, and appraising did not render equitable results.

Long-run and short-run problems in the assessment of real estate can be summarized as follows:

Long-run changes over time which affect the data used in the assessment process were four: First, there was a tendency toward an increasingly large number of new properties. During a period of declining building activity, it would be expected that the average age among properties would increase. On the other hand, during a period of expansion, average age would likely decrease. Second, there was a clustering of the sale prices of property around the mean price during a period of decline in building activity and a wider dispersion from a mean sale price when expansion of activity appeared again. Third, an

increase in the value of the mean sale price at a slow rate would be expected during a period of slack of building activity and a more rapid rate would be expected during an expansion. The fourth change was an increase in standardization of building techniques which caused a greater similarity of structures over time.

Short-run problems which were dependent upon the method of assessment included: (1) A failure of the appraisers to use sales data consistently; (2) An insufficient appraisal staff; (3) An insufficient methodology--not a sufficient number of value-modifying factors, such as the depreciation factor; (4) A failure to use the given methodology consistently.

In view of these many problems several suggestions for their correction can be made. The first suggestion is to examine the depreciation table to determine whether the table is sufficiently comparable to the sale prices of real estate in the community. Because of rather constant underassessment, it may well be that a downward bias is present in the depreciation table.

A second suggestion is to offset the time lags indicated in the analysis of vacant lots. A more careful study of building permits and utility connections might be made to determine if all new structures or improvements to structures are listed on the tax rolls.

Finally, it is concluded that time factors cause the replacement cost techniques used for improvement assessment to be inadequate. The use of a depreciated replacement cost cannot adequately express the "fair market value" of all structures.

Use Type: Conclusions and Suggestions

Considerable variation existed in the assessment of properties of varying use type. Ratios of assessed value to sale price among zoning classes were computed, the low ratio being 0.68 for apartments and the high ratio for light industrial properties of 1.03. Generally, commercial properties were assessed closer to sale price than were residential properties. A further confusion existed in the fact that not all properties were used according to how they were zoned. The most common instance of this zoning abuse was among duplexes and apartments. Perhaps zoning ordinances had not always been sufficiently enforced.

There were considerable differences in the condition of various properties. For example, 63 per cent of the commercial properties were in fair, poor, or obsolete condition while the remaining 37 per cent were in good condition. Broadly, the condition of properties tended to conform to the quality of construction and to the size of the building or residence.

When considered by use type, the condition of properties was partially dependent upon the fact that when a consumer was making a purchase in person--whether it be the leasing of rental property, the purchase of a house, or a purchase in a store--the property had to be in good condition. For example, a person making a purchase in a retail store demands a pleasant surrounding while in a service shop such as a television repair shop, this demand is not so strong. Average deviations by zoning categories revealed that the greatest amount of absolute variation of assessed value from sale price existed among apartments. Most properties of all use types were underassessed; however, 43 per cent of

the commercial properties were overassessed. The most commonly over-assessed properties were in the light industrial group. These included warehouses and small industrial shops. Among one-family residences, the most frequent number of cases of overassessment were those which sold for less than \$5,000. Most houses were taxed at less than \$100 per year, while most commercial properties were taxed at more than \$100 per year.

From the analysis of use type the following conclusions can be drawn:

1. The rather similar methodology applied to various use types of properties does not yield sufficiently adequate assessment results.
2. The use of replacement cost of structures in the assessment process tells little about use, but use type is significant in the sale prices of otherwise comparable properties.
3. Commercial properties cannot be adequately assessed without some knowledge of the income from such properties or similar properties.

The Use of an Average Sale Price

The most important single suggestion of this study was that the use of an average sale price for a standard of value was more adequate than present standards of value. For an average sale price to be significant sales data must be collected.

All collection of sales data could be increased; sales data could then be verified. From the collection and verification of sales data, average selling prices could be established for properties in all use categories. The establishment of the average sale price by use type

could be followed by further subdivisions into structural categories. These subdivisions could then be divided into a geographic breakdown for the community. In this manner, the average selling price could be established for most properties, according to their use, structural classification, size, age, location, and common features.

As an alternative to sales analysis, the replacement cost technique has been found unusable for older properties. Income data for capitalization of the value of a property is also limited in value. The reason is that some commercial properties may be owned by a subsidiary of a parent company which uses the building. Thus, the rents paid by the parent company to its subsidiary may be based on tax advantage.

Although the average price is a more sound concept than that of replacement cost, the suggestion of an average price does not eliminate the need for replacement cost data. Value added by additional features to the basic structural types (such as heating and cooling) could be systematically reviewed during the short-run appraisal period and standard cost figures used for each type. For example, for buildings of a given structural classification, cost factors for special features should be standardized.

Like the replacement cost technique, the use of an average price demands the inclusion of a depreciation concept. In the replacement cost technique, the present cost of replacing a property is estimated. This amount is diminished by the depreciation factor; consequently, all of the depreciation factors are less than 1.0 except for new properties. On the other hand, if an average sale price were used, a depreciation factor would have to be calculated based on the age of the average

property of that type. Thus, if the average age of a single-family dwelling was seven years, newer properties would have to be appreciated with a factor that was greater than 1.0. Multiplying the modified average sale price by the depreciation factor (greater than or less than 1.0) would yield the assessed value.

Because this study dealt with assessment procedures, the use of an average sale price for differing types of properties was suggested. Even the average price was not infallible. The most serious limitation on the property assessments generally comes from the demands of placing a "fair market value" on a property. No matter who makes the estimate of "fair market value," this evaluation can be misleading. For example, the price of a property in the short run is influenced by the estimates of value made by mortgage companies, insurance companies, federal agencies (such as the Federal Housing Administration), tax assessors, real estate brokers, buyers, and sellers. The confusion that results is that these estimates of value are all interdependent. An estimate by one of these persons can influence all other estimates of the value of the property. Therefore, "fair market value" may be simply the value placed on a property by a group of people who can never be certain that their particular estimate of value is a valid one.

In view of these many difficulties, equity in taxation of properties cannot be possible in absolute terms. To speak of equity is simply to suggest that one policy or procedure may produce more equity than another. No tax can be fully equitable which is merely a tax on property. Equity in taxation demands not equity among properties

merely but equity among persons. By its definition, the property tax does not encompass the concept of ability of persons to pay nor benefits to persons. The property tax is therefore plagued with an insufficient theory.

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The primary data regarding sales of residences was collected by the writer from lists of sales of properties compiled by the Fort Worth Real Estate Board. The Board publishes a list of sales of properties which includes the multiple-listing number, the street address, the selling price, the selling broker, and the listing broker. This was the primary source of sales of residential properties.

The primary source of data of sales of commercial properties was the City Tax Office land maps. In addition to this source the Commercial Recorder, a daily publication of mortgages and recordings of deeds was used to supplement other sources.

The primary sources of assessment data were the public records available in the City of Fort Worth Tax Assessor's office where a tax card is maintained for each property within the city limits.

In all three of the cases listed above, discussions with various officials in the tax office, and the Real Estate Board, and real estate brokers in the community contributed to the primary data used in this study.

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APPENDIX

APPENDIX A

APPRAISAL PROCEDURES

The appraisals of real estate made by the City of Fort Worth Tax Office are divided into two parts. The first part is the appraisal of land and the second is the appraisal of the improvements to land.

The procedure for the appraisal of land is based on a mass appraisal technique. The system of mass appraisals sacrifices some equity of individual properties, but it is considered sufficient for the bulk of properties. The system of mass appraisal includes four steps: 1) The classification of land parcels, 2) an analysis of value influences, 3) the establishment of unit values, and 4) the application of modifications for variations.

The classification of land depends upon its use. The initial classifications of use are: 1) residential, 2) industrial, 3) institutional, 4) recreational, and 5) commercial. Within these basic classifications, studies of sales data are made. Sales prices of parcels of land are recorded on land value maps maintained by the city assessor.

Several different units of value are used for parcels of land. Square foot, front foot, and acreage units are employed according to the use type of the property. The square foot unit of value is calculated by dividing the sale price by the square footage of the land. The acreage unit is calculated by dividing the number of acres into the sale price.

The square foot unit is usually used for very expensive industrial tracts while the acreage unit is used for undeveloped residential tracts and inexpensive industrial tracts. Where a specific sale price is not available, the field appraiser must make a judgment of the value of the tract by studying sale prices of comparable tracts.

The appraisal of most residential land makes use of the front foot unit of value. The front foot unit of value is a more complicated computation than the square foot unit. The complication arises because of the introduction of modifying factors such as shape, corners, and alleys. For residential land the modifications include factors for the depth of the lot, whether or not the lot is on a corner, and the shape of the lot. The standard parcel of residential land is rectangular in shape and 125 feet in depth. Sale prices of such standard lots may vary according to their location. Thus the sales data must be studied carefully by the field appraiser in order to ascertain a standard price from which to calculate the assessed value for specific lots. The modified value of the land multiplied by the number of front feet unit results in the assessed value of the parcel of land.

The unit of value for commercial property is the front foot value. This unit of value is calculated in the same manner as the front foot unit for residential property; but it includes an additional modifying factor, the influence of an alley. Different tables of modifying factors exist for residential and commercial land. Therefore, the field appraiser must determine the unit of value which is to be applied (based on a standard unit of value) to the specific land parcel and multiply the modified value factor times the number of units in the parcel of land. This results in the assessed value of land.

Improvements to land are valued by the replacement cost technique. The replacement cost technique is based upon: 1) classification by use in order to determine similar construction methods among use types; 2) the segregation of additional details not included in the basic buildings; 3) consideration of value influences; 4) the computation of the units of value; 5) modification factors for area, shape, floor level, and ceiling height; and 6) depreciation for physical deterioration. The basic idea of replacement cost is to estimate the cost of a standard kind of building according to use type and to modify this standard replacement cost according to the specific characteristics of the individual structure. Replacement cost as a method of evaluation is very similar to the kind of estimation done by building contractors. The appraiser uses a standard cost per square foot for improvements. The appraiser must first determine the classification of use type into which the structure falls. The residential use classification includes one family, two family, and apartment buildings. Industrial classifications include warehouses and factories. Commercial classifications include stores, service stations, public garages, offices, banks, theatres, hotels, and office buildings. Some structures do not exist in sufficient quantities to warrant separate classifications.

Once the use type is established the appraiser must determine the type of construction (brick, masonry, wood, or steel). With the use and construction type, the appraiser can refer to specific tables which give the basic square foot unit cost factor. The cost figure is modified with factors for area, shape, and the number of floor levels. In the case of commercial buildings there is also a modifying factor for ceiling height. Then, the modified unit cost factor is multiplied by the number of square feet. When standard cost estimates of additional features (such as heating

and cooling) are added to this product, the replacement cost of the structure is completed. This replacement cost figure depreciated by a factor from the depreciation table results in the final assessed value.

APPENDIX B

NORMAL DEPRECIATION TABLE FOR WOODEN FRAME RESIDENCES OF AVERAGE SIZE BASED ON A 60-YEAR LIFE EXPECTANCY*

Age	Per Cent Good	Age	Per Cent Good	Age	Per Cent Good
1	99	21	70	41	50
2	98	22	69	42	49
3	97	23	68	43	49
4	94	24	67	44	48
5	92	25	66	45	47
6	91	26	65	46	46
7	89	27	64	47	45
8	88	28	63	48	45
9	87	29	62	49	44
10	86	30	61	50	43
11	84	31	59	51	42
12	82	32	58	52	52
13	80	33	57	53	41
14	79	34	56	54	40
15	78	35	56	55	40
16	76	36	55	56	39
17	75	37	54	57	38
18	74	38	53	58	38
19	73	39	52	59	37
20	71	40	51	60	36

*The salvage value of 20 per cent does not appear until the type of property is 94 years old.

Source: Truett B. Marshall, The Assessment of Real Property: A Manual for Fort Worth (Austin, Texas, 1962), p. 665.

APPENDIX C

This appendix provides examples of the tax cards used by the City Tax Assessor to record assessment data. The first two pages are an example of the new card used since 1961, while the third and fourth pages are an example of the old card used prior to 1961.

LAND

[illegible]

DESCRIPTION OF IMPROVEMENTS

13. USE TYPE	Number of Living Units	Number of Rooms Per Living Unit
1-Family Dwelling		
2-Family Dwelling		
Apartment		

14. FOUNDATION		
a. FOOTINGS	b. WALLS	c. PIERS & BEAMS
Concrete	Concrete	Wood
Masonry	Masonry	Concrete
		Masonry

d. QUALITY: Adequate _____ Inadequate _____

15. FLOORS	
a. STRUCTURE	b. COVERING
Wood Joists	Concrete
Conc. Slab on Fill	Softwood
Conc. Slab Suspended	Hardwood
Conc. Joists	Asphalt Tile
Steel Joists	Vinyl Tile
	Ceramic Tile
	Carpet

c. SUBFLOOR: Yes _____ No _____

d. FINISH: Paint _____ Fill & Varn _____

e. QUALITY: Sub Std _____ Average _____ Superior _____

16. EXTERIOR WALLS	
a. STRUCTURE	b. OUTSIDE COVERING
Box	Asphalt Siding
Wood Frame	Wood Siding
Conc. Block	Asbestos Siding
Hollow Tile	Plaster
Brick	Common Brick
Stone	Face Brick
Haydite Block	Stone

c. SHEATHING: Solid _____ Strip _____

d. INSULATION: Yes _____ No _____

e. QUALITY: Sub Std _____ Average _____ Superior _____

17. ROOF	
a. STRUCTURE	b. ROOFING
Wood Frame	Built-Up
Steel Frame	Wood Shingles
Conc. Joists	Composition Shingles
Conc. Slab Suspended	Asbestos Shingles
	Tile
	Metal

c. SHEATHING: Solid _____ Strip _____

d. INSULATION: Yes _____ No _____

e. QUALITY: Sub Std _____ Average _____ Superior _____

18. DIAGRAM	Shape: _____	Scale 1"= _____'

19. INTERIOR WALLS	
a. STRUCTURE	b. FINISH
Box	Paint
Wood Frame	Textone
Steel Frame	Paper
Conc. Block	Plaster
Hollow Tile	Tile
Brick	Paneling
Sheetrock	

c. SHEATHING: Solid _____ Strip _____

d. INSULATION: Yes _____ No _____

e. QUALITY: Sub Std _____ Avg _____ Superior _____

20. CEILINGS	
a. STRUCTURE	b. FINISH
Wood Frame	Paint
Steel Joists	Textone
Conc. Slab	Paper
Exposed Beam	Plaster
Sheetrock	Wood
	Celotex
	Acoustical

c. SHEATHING: Solid _____ Strip _____

d. INSULATION: Yes _____ No _____

e. QUALITY: Sub Std _____ Avg _____ Superior _____

21. MILLWORK			
a. WINDOWS	b. DOORS	c. TRIM	d. BUILT-INS
Wood D.H. or S.H.	Wood Panel	Softwood	Cabinets
Metal D.H. or S.H.	Solid Slab	Hardwood	Shelves
Wood Casement	Hollow Core	Ornamental	Bar
Metal Casement	Sliding Glass	Metal	Dressing Table
Jalousie	Jalousie		
	Metal		

e. QUALITY: Sub Std _____ Average _____ Superior _____

22. ELECTRICAL	a. WIRING: Romex _____ Conduit _____
	b. OUTLETS: Few _____ Ample _____ Abundant _____
	c. FIXTURES: Sub Std _____ Average _____ Superior _____

23. Date: _____ BY: _____

24. CLASS: _____

25. ADDITIONAL DETAILS					
	Class	Area	Unit	Value	Total
a. PORCH					
b. GARAGE					
CARPORT					
STORAGE					
c. HEATING					
	No	Size	Unit	Value	
Cent. Forced					
Cent. Gravity					
Wall Furn.					
Floor Furn.					
d. COOLING					
	No	Size	Unit	Value	
Central					
Attic Fan					
e. Heat-Cool					
	No	Size	Unit	Value	
Central					
f. PLUMBING					
	Grade		Unit	Value	
	Sub-Std	Avg	Sup		
5 Unit Instal.					
Bath Tub					
Commode					
Lavatory					
Shower Stall					
Sink					
Water Heater					
Dish Washer					
Oven-Burner					
Disposal					
g. OTHER ADDITIONAL DETAILS					
Item		Unit	Value		
Storage	Sq. Ft.				
Masonry Trim	Sq. Ft.				
Fence	Ln. Ft.				
Fireplace					
Exhaust Fan & Hood					
TOTAL ADDITIONAL DETAILS					

