

Investigation and analysis of multi-family residential properties, Madison, Wisconsin. July, 1981

Landmark Research, Inc.

[s.l.]: [s.n.], July, 1981

<https://digital.library.wisc.edu/1711.dl/E4YPXU3PEEYAZ9A>

<http://rightsstatements.org/vocab/InC/1.0/>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

A STUDY OF MADISON APARTMENT
MARKET TRANSACTIONS AND A RECOMMENDED
VALUATION METHOD FOR ASSESSMENT PURPOSES

COPY NUMBER _____

Landmark
Research
Inc.

INVESTIGATION AND ANALYSIS
OF MULTI-FAMILY
RESIDENTIAL PROPERTIES

MADISON, WISCONSIN

PREPARED BY
LANDMARK RESEARCH, INC.

JULY 1981

COPYRIGHT © AUGUST 1981
BY LANDMARK RESEARCH, INC.
ALL RIGHTS RESERVED

Landmark
Research
Inc.

James A. Graaskamp, Ph.D., SREA, CRE
Tim Warner, MS, MAI, SREA
Jean B. Davis, MS

July 30, 1981

Frederic E. Mohs, Esquire
20 North Carroll Street
Madison, Wisconsin 53703

Dear Mr. Mohs:

In accordance with our proposal and previous conversations, Landmark Research, Inc., is transmitting the results of our investigation into an analysis of the sales transactions of major apartment properties in the Madison area. We have discovered and investigated these sales, analyzed their cash equivalent market values, analyzed the most appropriate indicators or predictors of value, and provided a table of net incomes and (cash) market values. This latter table is a device to allow the various property owners to approximate what their assessed values should be, since we did not make income projections and appraisals of their projects.

We analyzed all major projects that have recently sold with the exception of Parkwood Village and the Kessel property which were announced as conversions shortly after purchase and Holiday Gardens and Three Fountains because the Phoenix Group, the purchasers, denied cooperation. The analysis section of this report allows easy grouping for selection of subsets for comparables.

We developed a method to calculate the market value based on cash equivalency in a simple two step method. This method calculates present worth of value of the debt at the interest rate and terms prevailing on the assessment date. Then, the present value or cash equivalency of the down payment is calculated based on an equation abstracted from the cash equivalency analysis of all the recent sales we have analyzed. These two amounts are then summed to produce the property's value.

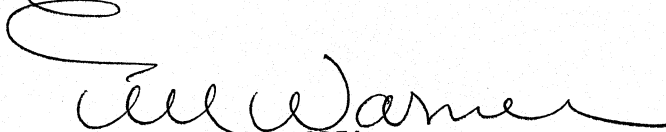
This method parallels a procedure derived by a colleague in Washington, D.C., who has analyzed several hundred commercial properties including approximately 90 apartments on a cash equivalency basis. He has developed a program for a hand-held calculator to assist in this. Our method is a simplification in the sense that having done our analysis we can more easily do and explain the value calculation, rather than having faith be placed on the calculations taking place in the "black box" of the calculator. A description of his findings and methods is contained in Exhibit B.

Landmark Research, Inc.

Mr. Frederic E. Mohs
Page 2
July 30, 1981

It must be remembered that this study reviewed almost all pertinent transactions as a group and derived indicators to predict value. These can be used to approximate value, but we have not valued individual properties.

FOR LANDMARK RESEARCH, INC.



Tim Warner, MS, MAI, SREA
Vice President

deb

Enclosure

TABLE OF CONTENTS

	Page
LETTER OF TRANSMITTAL	ii
LIST OF TABLES	v
LIST OF EXHIBITS	vi
I. PROBLEM ASSIGNMENT, DISCUSSION AND PROCEDURES	1
II. METHODS AND ASSUMPTIONS	13
III. ANALYSIS OF SALES	17
IV. METHODOLOGY FOR VALUE ESTIMATE	25
EXHIBITS	29
QUALIFICATIONS OF THE ANALYSTS	70

LIST OF TABLES

	Page
Table 1 Descriptor Variables of Sales	19
Table 2 Cash Equivalency Calculations	20
Table 3 A Table of Some Before Real Estate Tax Net Incomes and Their Related (Cash) Market Values	28

LIST OF EXHIBITS

		Page
Exhibit A	Citicorp <u>"Benchmark" Report</u> and <u>Mortgage Banker</u>	30
Exhibit B	Monograph by M. B. Hodges, <u>Mass Appraisal of</u> <u>Investment Class Properties</u>	36
Exhibit C	Printout of Variable Analysis Relating to Value Prediction	47
Exhibit D	Simple Linear Regression of Dollar Down Payment to . . . Projected Net Income Price	69

I. Problem Assignment, Discussion and Procedures

This research assignment involves an analysis of the sales of major apartment projects in the Madison area, review of the terms and conditions of the transactions as they reflect the value of financing as distinguished from the value of the real estate, and the selection of the most relevant predictor of value.

Three concepts should be defined:

(Nominal) Sales Price: The price at which a property is actually sold.

Cash Equivalent: A price expressed in terms of cash as distinguished from a price which is expressed all or partly in terms of the face amount of notes or other securities which cannot be sold at their face amount.

The cash equivalent price of a sale property may differ from its contract price and should represent the present worth at time of sale of all cash and other considerations paid for the real property as opposed to other portions of stated considerations which may be paid for services, fees and/or other non-realty items.

Market Value: The most probable price in terms of money which a property should bring in a competitive and open market...

All definitions are from the Revised Edition of Real Estate Appraisal Terminology, 1981.

It is submitted that the first concept defined above differs significantly from the latter two and it is the purpose of this study to find a value predictor relative to the last two concepts.

The term "cash equivalency" relates to the concept of market value and in these times and conditions is most usually different from the nominal

selling price of a property. In real estate assessment valuation, cash equivalency separates the value of nonstandard financing from the value of the real estate. The Society of Real Estate Appraisers seminar materials on Creative Financing and Cash Equivalency define "nonstandard as financing with the fixed rate long term mortgage as the norm or fixed standard."

MARKET VALUE AND CASH EQUIVALENCY

The Property Assessment Manual for Wisconsin Assessors describes the way the assessor should evaluate real property as follows:

The basis for the assessor's valuation of real property is found in s. 70.32, (1) Stats., "Real property shall be valued by the assessor in the manner specified in the Wisconsin property assessment manual under s. 73.03 (2a), Stats., from the actual view or from the best information that the assessor can practicably obtain at the full value which could ordinarily be obtained therefor at private sale." Numerous Wisconsin court cases have held that full value is equivalent to market value.

In the book "Real Estate Appraisal Terminology," market value is defined as: The highest price in terms of money which a property will bring in a competitive and open market under all conditions requisite to a fair sale. The buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus." Thus, the goal of the assessor is to estimate the full or market value of the real property.

There are certain conditions that are necessary for a sale to be considered a "market value" transaction. These are:

1. It must have been exposed to the open market for a period of time typical of the turnover time for the type of property involved.

2. It presumes that both buyer and seller are knowledgeable about the real estate market.
3. It presumes buyer and seller are knowledgeable about the uses, present and potential, of the property.
4. It requires a willing buyer and a willing seller, with neither party compelled to act.
5. Payment for the property is in cash, or typical of normal financing and payment arrangements prevalent in the market for the type of property involved.

"Real Estate Appraisal Terminology" also defines value as "The present worth of future benefits arising out of ownership to typical users or investors." What the investor is actually buying is the future income of the property. The users are typically purchasing the right to use the real property for personal satisfaction, shelter, or other benefits in the future. It is these future or anticipated benefits that give value to the property.

The important concepts to note here are that the valuation should be in terms of money and that market value is the present worth of future benefits.

A subsequent paragraph in the Property Assessment Manual for Wisconsin Assessors states that the assessor, in valuing real property, will encounter the terms of cost and sales price and it reminds the assessor that these are not synonymous with market value. This thought is paralleled by another author who states:

Cash equivalence analysis is the only method in which a consistent estimate of value can be made in a hybrid financing market. Contrary to many arguments, its use is neither restrictive nor conservative... it is realistic and logical for market valuation. This is true since at any given point in time a transaction truly involving "typical financing" would provide for a sale of the resulting debt instrument at par. In other words, if the resulting debt instrument reflects "typical financing" terms and rates the market will not discount it. This clearly is not the case in many of the myriad financing schemes currently in use.

Price simply is not value. As old as this adage is, it would appear that many analysts are delinquent in separating the two concepts. In today's market climate more and more sellers are relying on financing gimmicks to secure their "price." Unless such gimmicks are utilized by the entire market (or at least a major subsector) the resulting prices cannot, without adjustment, be utilized in a value derivation. Value trends similarly in many areas are not following unadjusted price trends. Value is a "real" concept; however, from a practical standpoint in residential analysis it is derived analytically from historical prices. If the terms of financing are not adjusted as stated earlier or if time adjustments are improperly calculated or merely assumed to be constant, the derived value estimate can become clouded. The facts of current reality are that in many market sectors once financial gimmicks have been adjusted, price levels are not increasing. Indeed, in many instances they are falling.

The mechanics of adjusting for nontypical or creative financing are not difficult, therefore it is puzzling that so few appraisers take the time and effort to appraise to the required market value definition. The analysis process can no longer be done by rote or by mechanical routine given the "you name the price" and "I'll set the terms" reality of the market.²

The concept of cash equivalent value is not new but is given renewed emphasis given the current volatility of all money markets including the real estate market. Specific articles in both the assessors' and appraisers' literature have appeared over the last decade. In a recent article the following statement clarified the assumptions and presumptions implicit in the definition of fair market value:

CASH AND MARKET VALUE

A brief review of the definition of market value and the conditions or presumptions implicit in that definition reminds us that cash, or its equivalent, is the only acceptable measure of the market value of real estate. The standard definition of market value begins: "The highest price in terms of money..." Obviously, market value must be the price in terms of money, not promissory notes. This requirement becomes even more evident after examining conditions or presumptions implicit in the market value definition. They are:

- "1) The buyer and seller are typically motivated.
- 2) Both parties are well informed or well advised, and each acting in what he considers his own best interest.
- 3) Reasonable time is allowed for exposure in the open market.
- 4) Payment is made in cash or its equivalent.
- 5) Financing, if any, is on terms generally available in the community at the specified date and typical for the property type in its locale.
- 6) The price represents a normal consideration for the property sold unaffected by special financing amounts and/or terms, services, fees, costs, or credits incurred in the transaction."

Condition 4 is unambiguous. Market value is reflected only when consideration accepted as payment for real estate has been converted to cash or its equivalent. Condition 5 qualifies the definition of cash equivalency used in condition 4. If the financing provided by the seller is on terms consistent with the current mortgage market, then the financed amount is equivalent to cash and should be appraised at the par value of the note. If the terms are more favorable than those currently available in the market, an adjustment for market value is required. The primary purpose of condition 6 is to close any loopholes or rationales connected with the requirements of conditions 4 and 5. There no longer should be any doubt about what constitutes market value with respect to the terms of the sale; however, some guidelines concerning when to use cash equivalent analysis should be helpful.³

The above writing clarifies the counter argument that is often brought by those who are unwilling to adjust for terms of sales or feel that perhaps these adjustments will offset each other. Cash equivalency then is merely an adjustment factor that removes special effects of financing, positive or negative.

The textbook Improving Real Property Assessments states:

Perhaps the least-understood aspect of sales data analysis is the adjustment of sales prices to fair-cash-value or market-value basis. Assessors have long recognized that sales prices sometimes reflect the manner of financing as well as the cash value of the property transferred. For the most part, however, the problem has been ignored partly because of its apparent complexity.⁴

We should first address the mechanics of some of these transactions. There are many instances in which prices do not reflect real property values but are after-the-fact artifacts that fall out after the deal is structured for

financing or for the deferral or avoidance of federal and state income taxes.

The following explanation will help define some reasoning:

Let's look at this from the point of view of a knowledgeable seller. Suppose he had the choice of receiving at the time of sale either 1) \$77,000 cash or 2) \$10,000 cash and \$67,000 to be paid over 20 years at 6% interest. Normally one might expect him to take all cash; why subject himself to waiting a long time for most of his money while receiving an interest rate considerably lower than a bank certificate pays? How do you get the seller to do this? Simple--you pay him either higher interest on the unpaid balance or a higher contractual price. Thus, a \$100,000 price may be agreed on for a tract of land with a cash value of only about \$77,000. The higher price induces the seller to give the buyer⁵ favorable terms instead of taking all cash at the time of sale.

Or alternatively, the following scenario has been envisioned:

INCOME-PRODUCING PROPERTY

An income property purchaser may bid, say, \$1,000,000 for property that generates annual net operating income of \$110,000. The bid is tendered with the buyer's knowledge that he can arrange a mortgage loan of \$800,000 principal at a 9-1/2 percent interest rate, with a twenty-five-year amortization term.

After consulting his income tax adviser, the seller may counteroffer: "I don't want \$1,000,000 cash. Pay me \$1,200,000. Give me \$200,000 down and a \$1,000,000 note over twenty-five years at 6-7/8 percent."

The buyer examines the counteroffer and learns that the annual debt service is precisely the same under this plan as it is with the 9-1/2 percent loan.

Consultation with his income tax advisers assures him that the increased depreciation accounting expense (achieved by a \$1,200,000 tax basis instead of \$1,000,000) will more than offset the reduced interest payment. This is because depreciation write-offs are based on cost. After ironing out a few details--prepayment penalties and privileges, loan assumption considerations, and the like--the deal is closed at \$1,200,000.

Would it be fair to value this property at \$1,200,000? Of course not. The fair market value, given a cash sale, was established at \$1,000,000. The \$200,000 difference between the contractual selling price and the cash value is attributable to the favorable (6-7/8 percent) interest rate. The cash-equivalent value of the purchase-

money mortgage given in the transaction is \$800,000 (monthly payment of \$6,988 multiplied by 114.46, the twenty-five-year annuity factor at the market [9-1/2 percent] interest rate). That amount, \$800,000 plus the cash down payment of \$200,000, equals the cash-equivalent property value. Just because a dollar sign precedes the face amount of the mortgage note, one cannot assume that the note is worth its face amount in cash.

Other cases in which adjustment to a cash equivalent value should be considered are those where the seller accepts a second mortgage or wraparound or where a low-interest-rate first mortgage is assumed. The application is essentially the same as that supplied in the home-sale situation. Notes worth less than face value must be discounted.⁶

The roll of financing in assessing and appraising as defined by statutes and courts of law must also be considered. One author has addressed this topic:

...then what sort of financing does the market value concept envisage? Thorough analysis of appraisal theory leads to an indisputable conclusion: When an estimate of value is rendered in terms of money, the market value concept includes no financing at all. In other words, money, not deeds of trust, nor contracts of sale nor stocks or bonds, is involved--a consideration in the form of legal tender or valid demand deposits. Legal support does not exist regarding the theory that the contemplated consideration may be estimated either partially or wholly in terms of a promise to pay or of any other tangible or intangible. In the Heilbron case, the court used the language "...estimated in terms of money..." In the De Luz Homes verdict, the court called market value "...a measure of desirability translated into money amounts." Narrative appraisals unfailingly report value estimates preceded by dollar signs, implying that the appraiser is talking about United States dollars and nothing else.

The role of financing in the appraisal of property although simple in theory is sometimes complicated in application. The shorthand terminology commonly used to describe a real estate transaction has caused considerable misconception among appraisers regarding actual market sales. For example, it is often said that a property sold for \$10,000, while the actual fact is that the sale consisted of:

1. \$100 (legal tender or demand deposits).
2. A written instrument called a promissory note secured by a mortgage or deed of trust with a face value of \$9,900.

This transaction completely contradicts the original statement. Even though transactions involving non-cash components constitute the vast majority of today's sales, speech habits continue to imply that dollars alone, and not dollars and paper, are paid.⁷

Does this mean that all non-cash sales cannot be utilized in evaluating a property? No, not at all.

These observations do not imply that appraisers cannot validly use non-cash sales in their analysis, but every sale used should first be converted into its "cash equivalent." The amount resulting from this conversion might properly be called the cash sale price. Prior to conversion, it is essential to refer to raw sales as nominal sales prices, although sometimes the nominal and cash prices will be equal.⁸

Given that the assessor or appraiser has obtained the sales price in terms of financing for the transaction, the mechanics to obtain the cash equivalent price of the nominal sales price are as follows:

The appraiser must take six steps in adjusting a raw sales price to its cash equivalent.

1. Identify any noncash components of the consideration for the property. These may include new or assumed notes, stocks, bonds, and personal and real property.
2. Ascertain the face value of any new loan or the balance owing on any assumed loan, look up the market price of any stocks or bonds, and ascertain the price of any tangible property as of the date of the sale.
3. Determine the terms of the notes or contract of sale--the rate of interest, the amount and timing of payments, and whether the loan is fully amortized by periodic payments or whether a balloon payment is required.
4. Determine the terms and conditions of the typical loan available for the type of property in question as of the date of the sale, the market rate of interest, the ratio of loan to value, the amortization method, timing of payments, and the period of re-payment. In the case of new financing, it should be determined whether or not the seller paid any points.
5. Adjust, when necessary, the face value of the newly drawn note, contract, or remaining balance of an assumed loan to its cash equivalent. This can be a simple matter of deducting seller's points from a new loan or a more complicated calculation involving the present-worthing of future payments. Examples of common types of cash equivalent adjustments are given in Section X.
6. Add the cash value of the noncash components of the consideration to all cash payments (cash down and prepaid interest). The addition of these two components equals the cash sale price of the sold property. The appraiser then can make any other necessary adjustments to the cash sales price, such as the time adjustment.⁹

It should also be noted that the term of cash equivalency or cash market value has been defined repeatedly in court cases across the country both in regards to eminent domain and to assessment matters.

Black's Law Dictionary offers the following definitions:

Fair cash market value. Terms "cash market value", or "fair market value", "reasonable market value" or "fair cash market value" are substantially synonymous. Fort Worth & D. N. Ry. Co. v. Sugg, Tex.Civ. App., 68 S.W.2d 570, 572.

Fair cash value. The phrase is practically synonymous with "reasonable value," "fair market value," and "actual cash value," meaning the fair or reasonable cash price for which the property can be sold on the market. Fair cash value for property tax purposes is interpreted as meaning "fair market value" or price that property would bring at a sale where both parties are willing, ready and able to do business and under no duress to do so. Consolidation Coal Co. v. Property Tax Appeal Bd. of Dept. of Local Government Affairs, 29 Ill.App.3d 465, 331 N.E.2d 122, 126.

For tax purposes "fair cash value", means the highest price the property would bring free of incumbrances, at a fair and voluntary private sale for cash. Commonwealth v. Sutcliffe, 287 Ky. 809, 155 S.W.2d 243, 245. The price that an owner willing but not compelled to sell ought to receive from one willing but not compelled to buy. Assessors of Quincy v. Boston Consolidated Gas Co., 309 Mass. 60, 34 N.E.2d 623, 626. The price that the property would bring at a voluntary sale where the owner is ready, willing and able to sell but not compelled to do so. In re 168 Adams Bldg. Corporation, C.C.A.111., 105 F.2d 704, 708. The price which someone will pay for it in open market.

See also Fair market value; Fair value; Just compensation.

True value. For tax assessment purposes, term refers to the market value of the property at fair and bona fide sale at private contract, and is in essence the value property has in exchange for money. City of Newark v. West Milford Tp., Passaic County, 9 N.J. 295, 88 A.2d 211, 214. See also Market value; Value.

Again, we must address the concept that the valuation and assessment must be in terms of money. Black's Law Dictionary defines that as follows:

Money. In usual and ordinary acceptation it means coins and paper currency used as circulating medium of exchange, and does not embrace notes, bonds, evidences of debt, or other personal or real estate. Lane v. Railey, 280 Ky. 319, 133 S.W.2d 74, 79, 81. See also Currency; Current money; Flat money; Legal tender; Near money; Scrip; Wampum.

A medium of exchange authorized or adopted by a domestic or foreign government as a part of its currency. U.C.C. & 1-201(24).

The following cases have been researched as pertaining to cash value and equivalent cash values:

United States v. Certain Parcels in City of Philadelphia (Wainwright) 144 F 2d 626 (1944)

Riley v. District of Columbia Redevelopment Land Agency 246 F 2d 641 (1957)

United States v. Leavell & Ponder, Inc. 286 F 2d 398 (1961)

Redfield v. Iowa State Highway Commission 110 NW 2d 379 (1961)

Surfside of Brevard, Inc., v. United States 414 F 2d 915 (1969)

Golder v. Department of Revenue, State Bd. of Tax. 599 P. 2d 216 (1979)

Village Green Co. v. Derderian 412 NYS 2d 421 (1979)

Northwood Apartments v. City of Royal Oak 296 NW 2d 639 (1980)

Items worthy of note from these cases can be capsulized as follows:

In the Philadelphia case, it was deemed that evidence of sales price is admissible regarding what a willing buyer would pay in cash to a willing seller and that in determining market value, exclusion of evidence of terms of contracts for sale were in error.

In the Riley case, the decision said that the jury could not reach a reasonable conclusion as to the relationship between the credit sale and the fair market value for the property and that the proper determination of fair market value in the face of divergent evidence required an understanding of terms equivalent to cash.

In the Leavell & Ponder case, the decision stated, "We think that the facts of this case are a clear demonstration of the inherent weakness of the evidence of prior sales of the property in question unless there are sales for cash or its equivalent."

The Redfield decision stated that sales for cash or contract are not inadmissible and that it was common knowledge that purchases by users of credit eventually cost the buyer more than if he could provide cash.

The Surfside case states that the sale must have been conducted for cash or its equivalent to be admissible.

In the Golder case, the testimony of the taxpayer's expert who failed to make the proper adjustment for non-cash sales was not admitted as competent evidence.

In the Village Green case, it was held that the court that reviewed property tax assessments was justified in disregarding sales prices in valuing property where evidence showed that the purchase price did not reflect the true value of.

the property given terms of remarkable purchase money mortgages which forgave all purchase money mortgages principal.

In the Northwood Apartment case, the court established that a property is to be assessed in accordance with its true cash value which is synonymous with fair market value and that any method for determining true cash value of the property which is recognized as accurate and reasonably related to fair market valuation is an acceptable indicator.

FOOTNOTES

1. Property Assessment Manual for Wisconsin Assessors, Vol. 1, p. 7-2.
2. A. Gullickson and R. Hewitt, III, "Adjusting to Reality," The Real Estate Appraiser Analyst, p. 23, Summer 1981.
3. J. Lipscomb, "Discount Rates for Cash Equivalent Analysis," The Appraisal Journal, p. 24, January 1981.
4. Improving Real Property Assessment, International Association of Assessment Officials, p. 108.
5. J. Friedman & B. Lindeman, "Cash Equivalent Analysis," The Appraisal Journal, pp. 38-39, January 1979.
6. J. Friedman, "Market Value & Seller Financing," The Assessor's Journal, pp. 38-39, January 1977.
7. K. Garcia, "Sales Price and Cash Equivalents," The Assessor's Journal, p. 10, January 1972.
8. Ibid, p. 11
9. "Cash Equivalent Analysis," Assessors' Handbook, California Board of Equalization, Section VI, 1976.

II. Methods and Assumptions

Given changes across time and dealing with a real estate market that has varying degrees of inefficiency, a standard methodology to produce useful benchmarks is necessary. The determination of cash equivalency necessitates development of the idea of an opportunity cost. The book Analyzing Real Estate Opportunities defines the opportunity cost as "an implied cost of foregoing an alternative investment." In a standard transaction a lender and a seller are separate entities. In most of the apartment transactions in Madison the seller is wearing two hats, that of the seller and that of the lender. The funds that he receives are a mixed bag which must be in turn applied to 1) a return to his equity investment and 2) to servicing the loan which he has made either in the form of a land contract or some other purchase money financial arrangement. This money has two rates of return. Equity money has its rate of return and debt money has its own rate. The money that is lent has an opportunity cost of at least the going rate and terms and conditions commonly offered in the mortgage market. We say at least because of all the risks and illiquidity involved. To calculate the cash equivalency or present worth of this position, we would reference an authoritative source of mortgage quotes and use the required yield as the opportunity cost of those monies involved and therefore in accordance with the previous discussion of the mechanics of discount and present worth, this would be the discount rate that should be applied to that payment. There are several authoritative sources of interest rates, terms and conditions. Two reviewed in connection with this research were the Investment Bulletin of the American Council of Life Insurance Associations and the Benchmark Report of Citicorp. The former reflects the average terms of

transactions for a large group of insurance companies. The latter reflects a survey of all sources of lending capital in competition with Citicorp in its various outlets across the country. The latter was selected as it produces monthly rates for different classes of property and reflects true yield as opposed to the Investment Bulletin's nominal or face rate of interest. There have been a number of hybrid mortgage instruments which have recently appeared that allow participations and appreciation or other income flows that need to be incorporated to reflect the true yield, over and above the face rate of interest. The Investment Bulletin's rates reflect only the nominal rate of interest and do not reflect other participations.

These Citicorp reports and summaries that appear in the publication, The Mortgage Banker monthly summary are included as Exhibit A to this report.

It should be noted that in the Citicorp reports for some months the letters "n.a." appear in the monthly quotes. In order to establish the meaning of this, Landmark Research contacted Mr. Carmody, the editor of the report, in his Houston office, to inquire whether these letters stood for not available or not applicable. Mr. Carmody's response was that even in these times apartment and other deals were being done. In the first five months of 1980 his Houston office had placed \$130 million worth of mortgage loans. However, it should be realized that the apartment investment was the least desirable of various alternatives that mortgage lenders had. You could obtain an apartment loan if the project were feasible economically, but that the lender looking at the risks and rewards would rather go into another investment, say an office building, and therefore would quote a higher rate

for your apartment mortgage. Given this rationale where apartment rates were not quoted or were quoted in terms of ranges, the higher end of the bracket should be used as the going mortgage rate for apartment investments.

When balloon or lump sum principal payments were made that exceeded normal loan-to-value ratios or debt service ratios, an imputed equity or investor opportunity cost should normally be used. This could be done by arbitrarily designating a premium over the going mortgage rate under the assumption that the yield to investors in the long run had to exceed the interest rate being charged when the decision was made or the investor would not have entered into the transaction at that point in time, or by using a loading for a "real rate" of return over an inflation index such as the CPI. There follows a listing of recent sales of apartment properties in Madison and environs. Sources for financing terms included the buyers or sellers themselves, their representatives, brokers, or agents, and prospectuses for limited partner security offerings on file at the Security Commissioner's Office of the State of Wisconsin, or the documents on file at the Register of Deeds Office for Dane County. These sales were cross checked with the computer printout available from the City Assessor's Office that lists all commercial transactions for the last three years. A number of sales were disqualified as being invalid or non-arm's length transactions. Parkwood Village and the former Kessel Apartments were excluded as they were offered for sale as condominiums shortly after purchase. Holiday Gardens and Three Fountains were not analyzed as the purchasers denied cooperation with this study. Other apartments that were purchased with condominium potential were analyzed for this effect upon price or value. The chart after the listings and calculations of cash equivalent values summarizes the important findings.

Further analysis was done to analyze which characteristics of the properties, either physical or economic, were the best predictors of value. Additionally, a program for a hand-held calculator, developed in Washington, D.C., by another firm, was utilized. Discussion of these analyses follow.

III. Analysis of Sales

This section contains two parts. Part one is the calculation of the cash equivalency of each sale researched. The second part is an analysis of the variables as they related to cash equivalent price.

There follows a listing of the calculations of cash equivalency for each transaction. Methodology and sources were explained previously. Each analysis displays the cash equivalency and the premium paid for financing terms. This "premium" is the difference between the nominal sales price and the cash equivalency calculation. "P.V." is the abbreviation employed for "Present Value."

The analysis of variables was handled by a package program that analyzes relations between variables and indicates those variables most closely correlated to cash equivalent value. The printout for this is shown in Exhibit B.

The variables analyzed included date of sale (DATE) projected gross income (PGI), actual gross income at time of sale (AGI), number of units (UNITS), condominium potential (CP), down payment in dollars (DP), projected net income (PNI), actual net income at time of sale (ANI), and cash equivalent price per net leaseable area (NLA).

The correlations with cash equivalent price are 89 percent or better for downpayment, projected gross income, projected net income, actual gross income and actual net income. The latter four variables are closely related and to avoid undue complications such as multicollinearity, which can best be described as statistical

fog which could obscure the relations among variables, use of only one of these four would be best to avoid problems. Reviewing subsets with one, two, three, four or five variables with the criteria of the highest adjusted R squared and the lowest Mallows Cp, which are statistical measures of association, it can be determined that projected net income and down payment would be good predictors of value. This finding agrees with the results of the study performed over a number of years in Washington, D.C. There the researcher concluded that cash market value can be predicted most easily using net income and down payment by means of the overall rate when adjusted for the tax rate loading. That study was based entirely on discussions with investors and trial and error methods without an attempt at multivariate statistical analysis. It would appear that these two separate studies have approached similar conclusions independently. Section IV will detail a method to calculate a cash market value using these variables.

TABLE 1

DESCRIPTOR VARIABLES OF SALES

	Cash Equivalent Price (CEP)	Sales Date (DATE)	Down Payment (DP)	Projected Gross Income (PGI)	Projected Net Income (PNI)	Actual Gross Income (AGI)	Actual Net Income (ANI)	No. of Units (UNITS)	Net Leasable Area (NLA)	Condominium Potential (CP)
✓ 1. Alhambra Apartments	2,247,212	12/28/78	300,000	398,131	214,593	368,640	202,752	96	88,600	1
✓ 2. Lamp- lighter	1,630,061	9/1/80	484,000	192,024	119,055	182,881	113,386	48	44,400	1
3. 22 Lang- don St.	1,083,862	10/20/80	220,000	156,000	93,600	148,571	89,143	74	29,600	0
✓ 4. Nakoma Heights	3,203,883	11/1/79	500,000	554,299	266,174	513,240	246,458	168	141,800	1
5. Midvale Heights	1,087,650	10/27/77	100,000	232,080	162,456	226,920	159,888	60	53,400	0
✓ 6. Newbury Bay-Sale #1	999,465	5/78	200,000	143,100	85,860	136,286	81,771	44	39,500	1
7. Newbury Bay-Sale #2	1,189,972	10/31/80	150,000	170,000	93,500	161,905	89,048	44	39,500	1
8. Park Tower	2,242,328	7/25/79	365,809	438,120	209,346	365,610	161,526	139	96,000	0
✓ 9. Rimrock Hills	2,484,387	11/5/79	600,000	465,264	273,575	430,800	253,310	140	131,000	1
10. Shore- Wood House	1,284,019	7/1/80	250,000	204,000 ¹	108,120	174,000 ¹	92,220	56	32,500 ²	0
✓ 11. The Villa Phase I	1,888,787	3/31/80	150,000	568,685	275,812	526,560	255,381	176	132,100	1
✓ 12. The Villa Phase II- VII	5,169,988	7/12/79	775,000	861,166	516,700	797,376	478,426	288	207,800	1
✓ 13. Westridge	4,522,277	5/29/80	1,000,000	686,125	411,675	623,750	374,250	176	156,000	1
✓ 14. King's Cross	1,172,906	3/31/81	354,475	235,080	131,360	215,491	88,780	58	56,700	0
15. 303 Princeton	343,976	3/6/81	25,000	60,654	34,977	55,140	31,875	14	14,700	0

1. Includes commercial rental of \$30,000 gross

2. Apartment NLA only

CASH EQUIVALENCY CALCUALTIONS

ALHAMBRA APARTMENTS Nominal Selling Price \$2,300,000

	<u>Market Rate</u> <u>10.25%</u>
1. P.V. of \$15,000 due 2/1, 3/1, 1979	29,620
2. P.V. of \$315,000 due 4/1, 1979	307,064
3. P.V. of \$13,700 mo. pymt due 5/1/79-4/1/80 (12 mos)	151,704
4. P.V. of \$300,000 due 4/1/80	264,067
5. P.V. of \$12,000 mo. pymt due 5/1/80-12/1/84	468,580
6. P.V. \$676,039 payment due 12/31/84	366,450
7. P.V. of \$665,502 balance due 1/10/85	359,727
TOTAL	<u>1,947,212</u>
+ EQUITY	300,000
CASH EQUIVALENT PRICE	<u>\$2,247,212</u>
Premium	<u>52,788</u>

THE LAMPLIGHTER Nominal Selling Price \$1,684,000

	<u>14%</u>
1. P.V. of \$8625 mo. pymt for 12 mos.	96,061
2. P.V. of \$1,150,000 due in 1 year	<u>1,000,572</u>
TOTAL	<u>\$1,096,061</u>
+ EQUITY	534,000
CASH EQUIVALENT PRICE	<u>\$1,630,061</u>
Premium	<u>53,939</u>

22 LANGDON ST. APARTMENTS Nominal Selling Price \$1,240,000

	<u>14.5%</u>
1. P.V. of \$6600 mo. payment due 70 mos.	310,584
2. P.V. of \$75,000 principal due 3 mos.	72,346
3. P.V. of \$145,000 principal due 6-1/2 mos.	134,110
4. P.V. of \$25,000 principal due 10 mos.	22,171
5. P.V. of \$10,000 principal due 22 mos.	7,678
6. P.V. of \$10,000 principal due 34 mos.	6,647
7. P.V. of \$25,000 principal due 46 mos.	14,388
8. P.V. of \$10,000 principal due 58 mos.	4,983
9. P.V. of \$674,474 balance due 70 mos.	<u>290,955</u>
TOTAL	<u>863,862</u>
+ EQUITY	220,000
CASH EQUIVALENT PRICE	<u>\$1,083,862</u>
Premium	<u>156,138</u>

TABLE 2 (Continued)

NAKOMA HEIGHTS Nominal Selling Price \$3,450,000

Market Rate

12%

1. P.V. of \$22,740 mo. pymt for 5 mos.	110,367
2. P.V. of \$250,000 principal pymt due 4/5/80	211,094
3. P.V. of \$20,813 mt pymt from 5/5/80-4/5/81	511,067
4. P.V. of \$250,000 principal pymt due 4/5/81	187,336
5. P.V. of \$18,885 mo. pymt from 5/5/81-12/31/85	510,786
6. P.V. of \$2,450,000 balloon due 12/31/85	<u>1,173,233</u>
TOTAL	<u>2,703,883</u>
+ EQUITY	<u>500,000</u>
CASH EQUIVALENT PRICE	<u>3,203,883</u>

Premium

246,117

MIDVALE HEIGHTS Nominal Selling Price \$1,150,000

Market Rate

9.0%

1. P.V. of \$7750 for 42-1/2 mos.	281,147
2. P.V. of \$859,243 due 42.25 mos.	<u>626,632</u>
	<u>907,779</u>

Second Mortgage dated 12/80

Market Rate 17%

3. P.V. of \$1157.72 for 60 mos.	46,584
4. P.V. of \$138,411 due 60 mos.	<u>59,513</u>
	<u>106,097</u>
5. \$106,097 discounted back to 10/77 (38 mos) @ 9.0%	<u>79,871</u>
TOTAL	<u>987,650</u>
+ EQUITY	<u>100,000</u>
CASH EQUIVALENT PRICE	<u>1,087,650</u>

Premium

62,350

NEWBURY BAY - SALE #1 Nominal Selling Price \$1,000,000

Market Rate

9.75%

1. P.V. of \$6900 mo. payment for 84 mos.	422,289
2. P.V. of \$744,307 balance due in 7 yrs.	<u>377,176</u>
TOTAL	<u>799,465</u>
+ EQUITY	<u>200,000</u>
CASH EQUIVALENT PRICE	<u>\$999,465</u>

Premium

535

TABLE 2 (Continued)

NEWBURY BAY-- SALE #2 Nominal Selling Price \$1,330,000

	<u>Market Rate</u>
<u>1st Mortgage</u>	<u>14.5%</u>
1. P.V. of \$8435 mo. pymt for 54 mos.	337,156
2. P.V. of \$705,104 balloon due 4-1/2 yrs	383,379
<u>Equitable Interest</u>	
3. P.V. of \$61,755 total pymt due year 1	53,935
4. P.V. of \$110,755 total pymt due year 2	84,480
5. P.V. of \$30,005 interest pymt due year 3	19,988
6. P.V. of \$30,005 interest pymt due year 4	17,457
7. P.V. of \$15,003 interest pymt due year 5	7,623
8. P.V. of \$250,045 balance due 5/1/85	135,954
TOTAL	1,039,972
+ EQUITY	150,000
CASH EQUIVALENT PRICE	1,189,972
Premium	140,028

PARK TOWER Nominal Selling Price \$2,550,000

	<u>Market Rate</u>
	<u>10.625%</u>
1. P.V. of \$8491.46 monthly pymt for 362 mos.	919,594
2. P.V. of monthly pymt of \$12,688.34 for 125 mos.	956,925
TOTAL	1,876,519
+EQUITY	365,809
CASH EQUIVALENT PRICE	\$2,242,328
Premium	307,672

RIMROCK HILLS Nominal Selling Price \$2,544,900

	<u>Market Rate</u>
	<u>10.25%</u>
1. P.V. of pymts, \$15,000 a mo. for 36 mos.	463,182
2. P.V. of \$1,783,000 balance, end of 3 yrs.	1,330,502
3. P.V. of \$100,000 principal pymt end of year 1	90,703
TOTAL	1,884,387
+ EQUITY	600,000
CASH EQUIVALENT PRICE	2,484,387
Premium paid	60,513

TABLE 2 (Continued)

<u>SHOREWOOD HOUSE</u> Nominal Selling Price \$1,350,000		<u>Market Rate</u>
		<u>13.5%</u>
1. P.V. of \$10,000 monthly pymt for 22 mos.	193,929	
2. P.V. of \$1,074,518 due in 22 mos.	840,090	
TOTAL	1,034,019	
+ EQUITY	250,000	
CASH EQUIVALENT PRICE	<u>\$1,284,019</u>	
Premium		<u>65,981</u>

<u>THE VILLA APARTMENTS-PHASE I</u> Nominal Selling Price \$2,500,000		<u>Market Rate</u>
		<u>15%</u>
1. P.V. of \$16,645.83 interest payments for 6 mos.	95,647	
2. P.V. of \$450,000 principal pymt due 10/1/80 (6 mos.)	417,679	
3. P.V. of \$15,041.67 monthly interest pymts 11/1/80-10/1/81	154,681	
4. P.V. of \$150,000 due 10/1/81	119,945	
5. P.V. of \$15,035.42 for 360 mos. beg. 11/1/81	950,835	
TOTAL	1,738,787	
+ EQUITY	150,000	
CASH EQUIVALENT PRICE	<u>\$1,888,787</u>	
Premium		<u>611,213</u>

<u>THE VILLA APARTMENTS - PHASES II-VII</u> Nominal Selling Price \$5,583,621		<u>Market Rate</u>
		<u>10.625%</u>
1. P.V. of \$652,405 due in 1 year	589,745	
2. P.V. of \$279,181 due in 2 years	228,128	
3. P.V. of \$30,833 monthly pymt on 1st mtgs for 120 mos.	2,273,219	
4. P.V. of \$1065 add'l interest pymt for 24 mos.	22,936	
5. P.V. of \$33,930 vendor's interest due yrs 81-89	144,606	
6. P.V. of \$3,119,223 due in 10 yrs	1,136,354	
TOTAL	4,394,988	
+ EQUITY	775,000	
CASH EQUIVALENT PRICE	<u>5,169,988</u>	
Premium		<u>413,633</u>

TABLE 2 (Continued)

WESTRIDGE Nominal Selling Price \$5,325,000

Market Rate

15%

1. P.V. of \$157,500 interest pymt for 2 yrs.	\$256,049
2. P.V. of \$500,000 principal payment due end of 2nd year	378,072
3. P.V. of \$112,500 interest pymt 3rd year	73,971
4. P.V. of \$167,500 interest pymt 4th year	95,769
5. P.V. of \$500,000 principal pymt 4th yr.	285,877
6. P.V. of \$150,000 amortization payment 5th yr.	74,577
7. P.V. of \$893,000 principal pymt 5th yr.	443,979
8. P.V. of \$22,899 mo pymt for 144 mos.	1,525,708
9. P.V. of ending balance \$2,077,371 due 1992	388,275
TOTAL	3,522,277
+ EQUITY	1,000,000
CASH EQUIVALENT PRICE	4,522,277

Premium

802,723

KING'S CROSS Nominal Selling Price \$1,358,000

Market Rate

15.50%

1. P.V. of \$100,353 interest pymt for 3 yrs.	227,242
2. P.V. of \$105,370 interest pymt for years 4 & 5	121,833
3. P.V. of \$110,388 interest pymt for years 6 & 7	103,379
4. P.V. of \$1,003,525 principal due in year 7	365,977
TOTAL	818,431
+ EQUITY	354,475
CASH EQUIVALENT PRICE	1,172,906

Premium

185,094

303 PRINCETON Nominal Selling Price \$345,180

Market Rate

15.50%

1. P.V. of \$187.50 monthly pymt for 8 mos.	1,416
2. P.V. of \$25,000 principal due in 8 mos.	22,560
TOTAL	\$23,976
+Market Financing	295,000
+EQUITY	25,000
CASH EQUIVALENT PRICE	\$343,976

Premium

\$1,204

IV. Methodology for Value Estimate

In our research into matters related to assessment valuation, we discovered a publication that had been submitted to both the Assessor's Journal and The Appraisal Journal. It was based on the study of 87 properties in the Washington, D.C., area. The author, M. B. Hodges, Jr., wrote:

This writer, having noticed the predominance and the price influence of seller-financing in the sales of investment properties, began several years ago to intensively study the mass market and compile a detailed catalog of property resales with their actual mortgage terms and their actual or budgeted first year net operating incomes. . . Based upon this writer's experience since 1968 in analyzing resales of investment properties, it is submitted that the seven principal factors which determine prices paid. . . It is not necessary, however, to incorporate all these seven factors in any of the first few steps recommended for appraisers and assessors in advancing their techniques for data analysis and valuation of investment properties. The most important factors, net income and mortgage financing and a third factor, equity yield, approximately derived within the OAR as will be seen in the regression analysis of market data are believed to be quite sufficient in improvement of valuation accuracy.

This method will not replicate the investor's thinking but will produce more accurate assessments than the cost approach or direct sales methods, providing that the valuer has access to full information on perceived income and financing details.

The paper quoted is reproduced as Exhibit C. This program could be used to prepare estimates of value after the various comparable sales were entered and other critical factors about a specific property were entered. However, since we have already done our analysis of the comparable sales, we can easily move to preparing approximate indications of value in a straightforward method that would remove any doubt as to exactly what the program and calculator were

doing. Our principle point in introducing this program is to demonstrate that our method and viewpoint has been independently arrived at from another direction.

Our simple equation is based on the fact that the total market value of the property in question is the sum of the value of the debt and the value of the equity. In cash equivalency terms, this is the sum of the present worth of the mortgage debt.

The calculation of the value of the debt can be done a variety of ways. Perhaps, the easiest is the following (for reference see, "Valuing Income Property in an Inflationary Environment," by K. Lusht and R. Zerbst in the July-August, 1980, The Real Estate Appraiser and Analyst, pp. 11-17): Divide net operating income by the mortgage constant times the debt coverage ratio. The terms and conditions should reflect the state of the market as of the valuation date. As the author of the previously quoted monograph states:

If taxable value is synonymous with cash value, and if this means that the seller receives all cash at settlement irrespective of the open money market mortgage(s) the purchaser chooses to obtain, the appraiser must calculate as closely as possible, dictated by the current rates of interest and the amortization terms for new first mortgages on the kinds of properties to be appraised, the ratio of mortgage loan to total property price. This ratio might now be 70%, 60%, or smaller. As earlier said, mortgage lenders have abandoned their (sometimes statutorily limited) loan-to-value ratio criteria. Except when they act as co-owners of or participants in the cash flow from investment properties, they now carefully determine the amount of a new loan by dividing the forecast NOI (after deducting RE taxes) by both the debt service constant and their preferred debt service coverage ratio for the kind of property to be mortgaged. By example, loan amount = $\$128,000 / (.1517)(1.27) = \$664,000$. Here, .1517 is the constant for a 15%, 30 year term loan, and 1.27 might be the lender's coverage ratio for a modern, well located apartment property.

This is also the reason why a market comparison adjustment technique or a regression technique was not used--adjustment to the current market would then be necessary.

Finally, the value of the equity, the cash down payment, must be added to the value of the debt. Down payment was estimated by simple linear regression. Exhibit D shows the plot and simple regression equation that was produced by analyzing down payment and cash equivalent selling price. Exhibit B, page 39, indicates the correlation to 89 percent between the two variables.

Table 3 displays this method given terms and conditions from the Citicorp report as of January 1, 1981, a capsule description of the method, and a table of some net incomes and the market value indications based upon this method.

TABLE 3

APPROXIMATING (CASH) MARKET VALUES

The value of an income producing property is the total of the values of the debt and equity positions. In estimating market value or cash equivalency value, this is the total of the present worth of the equity position and with standard financing, the down payment and the value of the debt position.

The value of the debt is most easily calculated by the formula

$$\text{Value of Debt} = \text{NOI}/(\text{DCR})(f).$$

In this case as throughout the paper, we will use a 1.25 debt coverage ratio (DCR) and a mortgage constant (f) for a 17 percent loan for 25 years of .17254.

Estimating the down payment is more involved and somewhat less accurate, but still more practically sound than other methods previously offered. After reviewing the correlation matrix shown in Exhibit "B", page 39, we see the down payment (DP) is most closely correlated with Cash Equivalency Price (CEP). However, since that is the unknown we are seeking, we must go to the next best variable, Projected Net Income (PNI). To calculate down payment from projected net income the following linear regression equation was solved for:

$$\text{Down Payment (DP)} = \$40,284 + (1.63)(\text{projected net income}).$$

This allows us to estimate market value from net income by the following method.

Take net income, divide this by .215675 which is the product of 1.25 (DCR) and .17254(f), this is the value of the debt. To this add \$40,284 plus 1.63 times net income, this is the equity position value. Sum the two to obtain total value.

A TABLE OF NET INCOMES AND MARKET VALUES

<u>Net Income</u>	<u>Market Value</u> <u>(Nearest \$1,000)</u>
\$ 40,000	\$ 291,000
50,000	412,000
75,000	348,000
100,000	667,000
150,000	980,000
200,000	1,294,000
300,000	1,920,000
400,000	2,250,000

EXHIBITS

EXHIBIT A

MORTGAGE MARKET TRENDS—JUNE 1981

RESIDENTIAL STRUCTURES, BY UNIT TYPE (Units in thousands)												-VALUE OF NEW CON- STRUCTION PUT IN PLACE (Dollars in millions)				HOUSE SALES (Units in thousands)				
Year and Month	PERMITS 16,000 ISSUING PLACES						HOUSING STARTS						Seasonally Adjusted Annual Rate				EXISTING HOUSES ¹	NEW HOUSES		
	Actual			Seasonally Adjusted Annual Rate			Actual			Seasonally Adjusted Annual Rate										
	Total	1-4 Units	5 + Units	Total	1-4 Units	5 + Units	Total	1-4 Units	5 + Units	Total	1-4 Units	5 + Units	Total	1 Unit	2 + Units	Non- Res.		Sold	Avail- able For Sale	Months Supply at Current Rate
1980	75	52	23	1,264	882	382	73	56	17	1,419	1,219	290	137,295	58,439	22,224	56,632	209	43	393	9.2
JAN	76	54	22	1,142	801	341	80	55	25	1,330	887	443	130,053	54,463	20,664	54,926	220	44	381	8.7
FEB	82	56	26	932	627	305	85	59	26	1,041	705	336	120,768	48,797	19,628	52,343	243	43	370	8.6
MAR	77	54	23	789	536	253	96	71	25	1,030	728	302	113,411	42,980	17,723	52,708	224	36	361	10.2
APR	77	56	21	825	576	249	92	73	19	913	714	199	108,104	38,057	17,131	52,916	219	43	349	8.1
MAY	101	69	32	1,078	721	357	116	84	32	1,223	832	391	104,786	35,750	16,150	52,886	233	48	342	7.2
JUN	113	84	29	1,236	900	336	119	94	25	1,249	951	298	101,629	37,263	14,922	49,444	275	55	339	6.2
JUL	116	86	30	1,361	988	373	129	104	25	1,416	1,139	277	105,162	40,380	15,647	49,135	286	60	332	5.6
AUG	143	94	49	1,564	1,060	504	138	107	31	1,545	1,189	356	109,738	44,448	16,286	48,974	293	48	339	7.1
SEP	127	89	38	1,333	953	380	154	112	42	1,561	1,157	404	113,773	48,661	14,938	50,174	282	44	343	7.8
OCT	95	65	30	1,355	953	402	112	82	30	1,563	1,167	396	120,271	50,994	18,198	51,079	210	37	344	9.2
NOV	88	56	33	1,235	869	366	96	65	31	1,535	1,105	430	125,692	52,954	18,181	54,557	187	34	337	10.2
DEC																				
1981																				
JAN	70	47	23	1,228	857	371	82	57	25	1,615	1,138	477	134,067	56,117	19,288	58,662	166	36	331	9.3
FEB	73	49	24	1,165	780	385	72	56	18	1,214	903	311	132,363	53,925	20,488	57,950	175	40p	324p	8.1p
MAR	100p	69p	31p	1,128p	758p	370p	107p	79p	29p	1,284p	929p	355p	130,529p	51,657p	20,723p	58,149p	223p	48p	321p	6.6p
3 months																				
1981	243	165	78				261	192	72								564	124		
1980	233	162	71				238	170	68								672	130		
1979	327	235	93				326	246	77								838	214		
1978	340	243	97				362	280	82								858	195		

RESIDENTIAL STRUCTURES, BY REGION (units in thousands)																CONSTRUCTION STATUS (units in thousands)						
Year and Month	PERMITS 16,000 ISSUING PLACES								STARTS								UNDER CONSTRUCTION			COMPLETIONS		
	Actual				Seasonally Adjusted Annual Rate				Actual				Seasonally Adjusted Annual Rate									
	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units
1980																						
JAN	5	8	39	23	116	221	577	350	6	6	40	22	194	213	673	339	1,088	678	410	125	94	31
FEB	5	8	39	24	125	178	524	315	3	8	47	23	73	223	701	333	1,041	644	397	126	89	37
MAR	10	10	40	22	122	120	442	248	7	12	45	21	105	178	511	247	991	609	382	130	90	40
APR	8	12	37	20	86	116	385	202	10	15	48	23	130	156	487	257	953	588	365	135	93	42
MAY	9	13	36	19	98	122	399	206	12	15	45	21	129	122	459	203	918	570	348	120	87	33
JUN	11	15	48	27	114	142	534	288	13	21	58	24	120	179	679	245	900	566	334	131	89	42
JUL	12	20	50	32	119	208	566	343	12	20	60	27	194	193	664	278	890	572	318	125	82	43
AUG	11	19	53	33	117	213	650	381	13	21	63	32	128	224	694	370	887	576	311	128	96	32
SEP	14	26	69	35	143	242	770	409	17	30	61	30	216	288	679	362	905	601	304	116	81	35
OCT	14	26	56	31	139	247	597	350	12	34	75	32	107	310	782	362	935	620	315	120	89	31
NOV	10	17	44	25	124	225	639	367	10	23	55	24	111	305	783	364	932	632	312	114	81	33
DEC	9	13	52	22	111	209	623	292	9	13	52	22	131	259	793	352	918	657	311	129	99	30
1981																						
JAN	5	6	40	18	102	190	641	295	5	8	30	18	163	329	887	281	892	570	313	88	69	18
FEB	5	7	42	19	124	174	598	269	3	6	45	18	85	189	677	263	869	551	318	93	72	22
MAR	9p	15p	51p	24p	116p	195p	542p	275p	8p	15p	63p	22p	121p	210p	690p	263p	891p	569p	322p	106p	74p	32p
3 months																						
1981	19	28	133	61					16	29	138	58								287	115	72
1980	20	26	118	69					16	26	132	66								381	173	166
1979	28	44	150	104					26	39	161	97								334	265	69
1978	28	58	135	121					19	55	172	116								375	295	80

INTEREST RATES AND YIELDS

Year and Month	1-4 UNIT MORTGAGES						APARTMENTS ⁴	CON- STRUCTION LOANS ⁵ ALL TYPES	FNMA		GNMA Current Securities Yield ⁶	SELECTED SECURITIES				SPREADS (Basis Points)	
	FHA Opinion Survey			FHLBB Survey					FMS Auction Yields on 4 mo Commitments ⁵ FHA VA Conv	Prime Commercial Paper 90-119 Days		Aaa Utility New Issue	U.S. Gov't		FHA New Minus Aaa Utility	GNMA 10-yr Gov't	
	FHA New ¹	Conventional		Conventional		10-yr						26-wk	100-119 Days	Minus 10-yr Gov't			
		New	Existing	New	Existing												
1980																	
JAN	12.60	12.80	12.80	11.87	12.10	11.875-12.250			12.930	13.188	11.96	11.73	10.80	11.851	13.04	5	116
FEB	n.a.	14.10	14.10	11.93	12.62	13.000-14.000	15.77		14.589	14.124	13.02	13.57	12.41	12.721	13.78	5	61
MAR	14.63	16.05	16.05	12.62	12.87	n.a.			15.581	16.665	13.69	14.00	12.75	15.100	16.81	63	94
APR	13.45	15.55	15.55	13.03	13.57	n.a.			14.670	16.451	13.17	12.90	11.47	13.618	15.78	55	170
MAY	11.99	13.20	13.20	13.67	14.12	13.000-15.000	18.32		12.855	13.535	11.54	11.53	10.18	9.149	9.49	7	136
JUN	11.85	12.45	12.45	12.69	13.31	12.250-12.750			12.360	12.946	10.89	10.96	9.78	7.218	8.27	89	111
JUL	12.39	12.45	12.45	12.48	12.61	12.500-13.500			12.630	12.807	11.53	11.60	10.25	8.101	8.41	79	128
AUG	13.54	13.25	13.25	12.25	12.26	13.000-14.500	13.16		13.873	13.663	12.33	12.32	11.10	9.443	9.57	122	123
SEP	14.26	13.65	13.70	12.36	12.38	13.000-14.000			14.819	14.450	12.86	12.74	11.51	10.546	10.92	152	135
OCT	14.38	14.10	14.10	12.60	12.64	13.500-14.500			14.965	14.791	13.24	13.18	11.75	11.566	12.52	120	149
NOV	14.47	14.70	14.70	13.08	13.29	n.a.	15.31		15.530	15.280	13.69	13.85	12.68	13.612	15.18	62	101
DEC	14.08	15.05	15.05	13.28	13.58	n.a.			15.192	15.568	13.71	14.51	12.84	14.770	18.07	43	87
1981																	
JAN	14.23	14.95	14.95	13.28	13.91	n.a.			14.870	14.923	13.65	14.12	12.57	13.883	16.58	11	108
FEB	14.79	15.10	15.10	13.54	14.13	n.a.	19.40		15.261	15.108	14.16	14.90	13.19	14.134	15.49	11	103
MAR	15.04	15.25	15.25	14.02	14.34	n.a.			15.590	15.337	14.15	14.71	13.12	12.983	13.94	33	103

MORTGAGE MARKET TRENDS—OCTOBER 1980

RESIDENTIAL STRUCTURES, BY UNIT TYPE (Units in thousands)												VALUE OF NEW CON- STRUCTION PUT IN PLACE (Dollars in millions)				HOUSE SALES (Units in thousands)				
Year and Month	PERMITS 16,000 ISSUING PLACES						HOUSING STARTS						Seasonally Adjusted Annual Rate				EXISTING HOUSES ¹	NEW HOUSES		
	Actual			Seasonally Adjusted Annual Rate			Actual			Seasonally Adjusted Annual Rate										
	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units								
	Total	1 Unit	2+ Units	Non- Res.	Sold	Avail- able For Sale	Months Supply at Current Rate													
1979																				
APR	139	106	33	1,437	1,082	355	161	131	30	1,750	1,386	364	121.155	59.897	16.943	44.315	333	72	417	5.7
MAY	162	111	41	1,618	1,163	455	189	144	45	1,801	1,349	452	122.818	59.915	16.915	45.988	371	69	426	6.2
JUN	156	112	44	1,639	1,144	495	193	147	46	1,910	1,399	511	125.955	60.617	17.802	47.536	344	64	420	6.6
JUL	138	104	34	1,528	1,136	392	164	130	34	1,764	1,352	412	127.697	61.059	17.916	48.722	343	66	421	6.3
AUG	152	111	41	1,654	1,181	473	172	133	39	1,788	1,389	399	127.149	61.381	17.915	47.853	377	69	419	6.1
SEP	140	90	50	1,775	1,166	609	164	117	47	1,874	1,360	514	128.898	61.308	19.055	48.535	314	62	414	6.7
OCT	141	96	45	1,542	1,064	478	169	122	47	1,710	1,268	442	130.677	60.858	19.005	50.814	329	55	416	7.6
NOV	98	64	34	1,263	850	413	119	82	37	1,522	1,094	428	130.358	59.218	19.749	51.391	255	41	409	10.0
DEC	81	52	29	1,244	899	345	92	65	27	1,548	1,165	383	132.078	57.753	20.751	53.574	197	34	403	11.8
1980																				
JAN	75	52	23	1,264	882	382	73	56	17	1,419	1,219	290	137.295	58.419	22.224	56.632	209	43	393	9.2
FEB	76	54	22	1,142	801	341	80	55	25	1,330	887	443	130.053	54.463	20.664	54.926	220	44	381	8.7
MAR	82	56	26	932	627	305	85	59	26	1,041	705	336	120.768	48.797	19.628	52.343	243	43	370	8.6
APR	77	54	23	789	536	253	96	71	25	1,030	728	302	113.411	42.980	17.723	52.708	224	36	361	10.2
MAY	77	56	21	825	576	249	92	73	19	913	714	199	108.104	38.057	17.131	52.916	219	43	349	8.1
JUN	101	69	32	1,078	721	357	116	84	32	1,223	832	391	104.786	35.750	16.150	52.886	233	48	342	7.2
JUL	113	84	29	1,236	900	336	119	94	25	1,249	951	298	101.738p	37.210p	14.894p	49.634p	275	55p	338p	6.1p
6 months																				
1980	488	341	147				542	398	144								1,348	257		
1979	763	555	208				868	670	198								1,902	387		
1978	850	623	227				987	766	221								1,956	437		
1977	823	621	202				949	766	183								1,750	442		

RESIDENTIAL STRUCTURES, BY REGION																CONSTRUCTION STATUS						
(units in thousands)																(units in thousands)						
Year and Month	PERMITS 16,000 ISSUING PLACES								STARTS								UNDER CONSTRUCTION			COMPLETIONS		
	Actual				Seasonally Adjusted Annual Rate				Actual				Seasonally Adjusted Annual Rate									
	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units
1979																						
APR	14	31	51	43	142	297	543	455	15	34	65	47	171	356	692	531	1,228	793	435	142	111	31
MAY	18	37	60	48	181	328	616	493	18	50	72	51	173	396	734	498	1,259	831	438	156	113	43
JUN	18	34	59	45	199	332	636	472	19	24	79	51	178	371	862	499	1,283	837	446	166	130	36
JUL	15	27	51	45	161	281	585	501	18	36	68	43	174	356	762	472	1,300	852	448	151	116	35
AUG	15	30	50	47	147	310	664	533	20	39	74	40	176	388	770	454	1,301	860	441	159	123	36
SEP	19	29	54	39	217	337	704	517	13	39	67	46	164	392	765	553	1,283	850	433	181	125	56
OCT	14	28	59	38	151	271	673	447	21	35	73	40	172	317	765	456	1,274	837	437	174	135	49
NOV	13	16	42	27	152	191	557	363	19	20	53	27	170	249	716	387	1,226	794	432	165	121	44
DEC	10	12	34	25	144	224	517	359	10	15	40	27	156	326	667	399	1,140	717	423	174	139	35
1980																						
JAN	5	8	39	23	116	221	577	350	6	6	40	22	194	213	673	339	1,088	678	410	125	94	31
FEB	5	8	39	24	125	178	524	315	3	8	47	23	73	223	701	333	1,041	644	397	126	89	37
MAR	10	10	40	22	122	120	442	248	7	12	45	21	105	178	511	247	991	609	382	130	90	40
APR	8	12	37	20	86	116	385	202	10	15	48	23	130	156	487	257	953	588	365	135	93	42
MAY	9	13	36	19	98	122	399	206	12	15	45	21	129	122	459	203	918	570	348	120	87	31
JUN	11	15	48	27	114	142	534	288	13	21	58	24	120	179	679	245	900	566	334	131	89	42
JUL	12	20	50	32	119	208	566	343	12	20	60	27	194	193	664	278	895p	574p	321p	125p	89	43p
6 months																						
1980	48	66	239	135					51	77	283	134								767	542	225
1979	78	145	304	238					78	128	378	246								868	663	205
1978	80	179	300	293					83	209	417	278								824	659	165
1977	87	187	278	271					86	217	374	272								714	575	139

INTEREST RATES AND YIELDS																	
Year and Month	1-4 UNIT MORTGAGES						APARTMENTS ⁴	CON- STRUCTION LOANS ⁵ ALL TYPES	FNMA		GNMA Current Securities Yield ⁷	SELECTED SECURITIES				SPREADS (Basis Points)	
	FHA Opinion Survey			FHLBB Survey					FMS Auction Yields on 4 mo. Commitments ⁶ FHA/VA Conv.	Aaa Utility New Issue		U.S. Gov't		Prime Commercial Paper 90-119 Days	FHA New Minus Aaa Utility	GNMA minus 10-yr Gov't	
	FHA New ³	Conventional		Conventional		10-yr						26-wk					
		New	Existing	New	Existing												
1979																	
APR	n.a.	10.55	10.55	10.34	10.54	10.125-10.375	12.23	10.645	11.035	9.86	9.70	9.18	9.490	9.85	n.a.	68	
MAY	10.61	10.80	10.80	10.47	10.60	10.250-10.500		10.847	11.357	10.02	9.83	9.23	9.531	9.94	78	79	
JUN	10.49	10.90	10.90	10.66	10.71	10.250-10.625		10.773	11.560	9.81	9.50	8.91	9.062	9.76	90	90	
JUL	10.46	10.95	11.00	10.78	10.93	10.250-10.625	12.52	10.652	11.521	9.81	9.59	8.95	9.236	9.87	87	86	
AUG	10.58	11.10	11.15	11.01	11.14	10.375-10.625		10.671	11.517	9.97	9.48	8.99	9.425	10.27	110	98	
SEP	11.37	11.35	11.35	11.02	11.20	10.625-10.875		11.091	11.741	10.40	9.83	9.33	10.203	11.63	154	107	
OCT	n.a.	12.15	12.20	11.18	11.30	11.250-11.500	15.56	12.497	12.865	11.30	10.97	10.30	11.660	13.23	n.a.	100	
NOV	12.41	12.50	12.50	11.37	11.52	11.500-12.000		12.797	13.794	11.58	11.42	10.65	11.856	13.57	99	91	
DEC	12.24	12.50	12.50	11.64	11.89	11.875-12.000		12.485	12.981	11.56	11.25	10.39	11.847	13.24	97	117	
1980																	
JAN	12.60	12.80	12.80	11.87	12.10	11.875-12.250	15.77	12.930	13.188	11.96	11.73	10.80	11.851	13.04	87	116	
FEB	n.a.	14.10	14.10	11.93	12.62	13.000-14.000		14.589	14.124	13.02	13.57	12.41	12.721	13.78	n.a.	61	
MAR	14.63	16.05	16.05	12.62	12.87	n.a.		15.581	16.665	13.69	14.00	12.75	15.100	16.81	64	84	
APR	13.45	15.55	15.55	13.03	13.57	n.a.	18.32	14.670	16.451	13.17	12.90	11.47	13.618	15.78	55	170	
MAY	11.99	13.20	13.20	13.67	14.12	13.000-15.000		12.855	13.535	11.54	11.53	10.18	9.149	9.49	46	106	
JUN	11.85	12.45	12.45	12.69	13.31	12.250-12.750		12.360	12.946	10.89	10.96	9.78	7.218	8.27	50	111	
JUL	12.39	12.45	12.45	12.48	12.61	12.500-13.500		12.630	12.807	11.53	11.60	10.25	8.101	8.41	79	128	

**Citicorp Real Estate Benchmark Rates, Apartment Mortgages**

	<u>March 27, 1981</u>	<u>February 27, 1981</u>	<u>January 30, 1981</u>
Interest Rate	Proposed - not available Immediate-15½ (FHLMC)	Proposed - not available Immediate-15½ (FHLMC)	Not available
Fee	1½ - 2	1½ - 2	
Term (Years)	Immediate-30 years	Immediate-30 years	

**Citicorp Real Estate Benchmark Rates, Commercial Real Estate Projects
(medium-size shopping centers, office buildings, industrial buildings)**

	<u>March 27, 1981</u>	<u>February 27, 1981</u>	<u>January 30, 1981</u>
Interest Rate	Mtge rate + participation or equity adding up to 14½ - 15½	Mtge rate + participation or equity adding up to 14½ - 15	Mtge rate + participation or equity adding up to 15 - 17
Fee	1	1	1
Term (Years)	25-30 yr amortization	25-30 yr amortization	25-30 yr amortization

Citicorp Real Estate Benchmark Rates, Credit Projects (all types)

	<u>March 27, 1981</u>	<u>February 27, 1981</u>	<u>January 30, 1981</u>
Interest Rate	Mtge rate + participation or equity adding up to 14½ - 15½	Mtge rate + participation or equity adding up to 14½ - 15	Mtge rate + participation or equity adding up to 15 - 16½
Fee	0	0	0
Term (Years)	30-35 yr amortization	30-35 yr amortization	30-35 yr amortization

The limited amount of straight mortgage money that was available last month has been absorbed. At least one lender has shifted the money he had earmarked for straight mortgages to the bond market instead.

Deals available today start with 12½ or 13½% mortgage rate plus kicker or joint venture. That will bring lender's total return to 14½-15½%. Most also have 5-year or 10-year calls.

On an owner-occupied office building, where standard kickers aren't possible, the 13½% rate is adjusted after five years to 14 to 16% (depending on the current market) or borrower may seek other financing.

Funds for industrial projects are scarce. Some are available on adjustable rate basis --14--14-3/4% first year, adjustable annually to 1% above new AA utility bond rate.

CITICORP REAL ESTATE, INC.**Citicorp Real Estate Benchmark Rates, Apartment Mortgages**

	<u>February 27, 1981</u>	<u>January 30, 1981</u>	<u>December 31, 1980</u>
Interest Rate	Proposed - not available Immediate-15½ (FHLMC)	Not available	Not available
Fee	1½ - 2		
Term (Years)	Immediate-30 years		

**Citicorp Real Estate Benchmark Rates, Commercial Real Estate Projects
(medium-size shopping centers, office buildings, industrial buildings)**

	<u>February 27, 1981</u>	<u>January 30, 1981</u>	<u>December 31, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 14½ - 15	Mtge rate + participation or equity adding up to 15 - 17	Mtge rate + participation or equity adding up to 15 - 17
Fee	1	1	1
Term (Years)	25-30 yr amortization	25-30 yr amortization	25-30 yr amortization

Citicorp Real Estate Benchmark Rates, Credit Projects (all types)

	<u>February 27, 1981</u>	<u>January 30, 1981</u>	<u>December 31, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 14½ - 15	Mtge rate + participation or equity adding up to 15 - 16½	Mtge rate + participation or equity adding up to 15 - 16½
Fee	0	0	0
Term (Years)	30-35 yr amortization	30-35 yr amortization	30-35 yr amortization

There's an improving tone in the market. At least some lenders are interested in locking in current high yields. Lenders' target for total rate of return (including kickers) has leveled off to 15% or under. They're willing to go as low as 12% for the initial rate of return.

•Funds are becoming available for straight mortgages with no kickers. Current rate is 14½-14-3/4% with 5-yr and 10-yr call provisions. One lender has allocated \$100 million through 1983, \$20 million this year. He will trade piece of rate for piece of participation if package adds up to 14-3/4% within two years.

•Funds for deals under \$10 million are becoming available. Life companies with smaller pension-fund accounts are open for these.

•Immediates for apartments on straight 30-year loans, no kickers, no calls, are available through FHLMC. Not suitable for proposed construction --rates are only guaranteed for two months.

•On a joint venture hotel deal in Southwest, there is no debt service. Lender provides 75% of cash for 50% ownership, expects 12% cash return in first year.

**Citicorp Real Estate Benchmark Rates, Apartment Mortgages**

	<u>January 30, 1981</u>	<u>December 31, 1980</u>	<u>November 28, 1980</u>
Interest Rate	Not available	Not available	Not available
Fee			
Term (Years)			

**Citicorp Real Estate Benchmark Rates, Commercial Real Estate Projects
(medium-size shopping centers, office buildings, industrial buildings)**

	<u>January 30, 1981</u>	<u>December 31, 1980</u>	<u>November 28, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 15 - 17	Mtge rate + participation or equity adding up to 15 - 17	Mtge rate + participation or equity adding up to 15½ - 16½
Fee	1	1	1
Term (Years)	25-30 yr amortization	25-30 yr amortization	25-30 yr amortization

Citicorp Real Estate Benchmark Rates, Credit Projects (all types)

	<u>January 30, 1981</u>	<u>December 31, 1980</u>	<u>November 28, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 15 - 16½	Mtge rate + participation or equity adding up to 15 - 16½	Mtge rate + participation or equity adding up to 15½ - 16
Fee	0	0	0
Term (Years)	30-35 yr amortization	30-35 yr amortization	30-35 yr amortization

On any given day, some of the major lenders are out of the market. Foreign lenders are coming in. At least one major project, a Midwest office building, is being financed by a German bank on a purchase-leaseback.

Nearly all the available funds go to projects in \$20 million-and-up range. Terms are 12-12½ plus 50 percent equity, or 13¼-13-¾ plus 15 to 40 percent of increases. Many loans carry prepayment fees of five times the last year's participation. At least one interest-only deal with 15-year balloon has been made (on an existing New York office building).

On the few \$1-2 million range deals, rates are 15-16% with five-year call, no kickers. One Midwest industrial building has variable-rate loan starting at 14¼%, adjusted annually to 100 basis points above new-issue Aa utility-bond rate. Ceiling is 18¼%, floor 12¼%.

CITICORP REAL ESTATE, INC.**Citicorp Real Estate Benchmark Rates, Apartment Mortgages**

	<u>December 31, 1980</u>	<u>November 28, 1980</u>	<u>October 31, 1980</u>
Interest Rate	Not available	Not available	If available 13½+ with participation 14½+ without participation
Fee			1
Term (Years)			30 yr amortization

**Citicorp Real Estate Benchmark Rates, Commercial Real Estate Projects
(medium-size shopping centers, office buildings, industrial buildings)**

	<u>December 31, 1980</u>	<u>November 28, 1980</u>	<u>October 31, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 15 - 17	Mtge rate + participation or equity adding up to 15½ - 16½	13+ with participation 14+ without participation
Fee	1	1	1
Term (Years)	25-30 yr amortization	25-30 yr amortization	25-30 yr amortization

Citicorp Real Estate Benchmark Rates, Credit Projects (all types)

	<u>December 31, 1980</u>	<u>November 28, 1980</u>	<u>October 31, 1980</u>
Interest Rate	Mtge rate + participation or equity adding up to 15 - 16½	Mtge rate + participation or equity adding up to 15½ - 16	13+ with participation 14+ without participation
Fee	0	0	0
Term (Years)	30-35 yr amortization	30-35 yr amortization	30-35 yr amortization

Few deals were made in December. In addition to the normal pre-holiday lull, few developers are interested in obtaining commitments at the current rates.

Major lenders indicate they will be more eager for mortgages in the new year and more will be actively in the market. However, they will continue to demand substantial equity or participation on top of the high rates. The lender equity in a number of recent deals has ranged up to 60 percent, and a 25 percent participation in gross income has been the virtual minimum.

1980 was the most difficult year in memory for the commercial mortgage market. On top of the high total rate of return and the near-universal turn to some form of kicker, financing for apartments and for less-than-giant commercial projects has dried up. Virtually the only deals made in recent months were for prime office buildings and downtown hotels. Most of these were in the \$100 million-and-over range. Mortgage negotiations are now so complex that the time required to consummate a deal has doubled. Over the three-month period that is now the average, conditions may change so much the deal will be killed.

Statistical Research, Inc.

EXHIBIT B

BNDP9R V2.1 30-Jul-81 11:53:05

Program revised: December 1979 Manual revised: July 1979
(c)1979, The Regents of the University of California
Licensed for PDP-11 by Software Development Inc.

Site: (2-080) U. Wisconsin School of Business
Expiration date: February 1981

- IF THERE ARE FEWER THAN THREE INDEPENDENT VARIABLES, THEN METHOD=NONE. WILL BE USED.
- IF STATISTICS. IS STATED IN THE PLOT PARAGRAPH, THEN STATISTICS AS IN BNDP6D WILL ACCOMPANY EACH PLOT.
- TO LIMIT THE NUMBER OF VARIABLES IN THE REPORTED SUBSETS, IN THE PRINT PARAGRAPH STATE MAXVAR=THE MAXIMUM NUMBER OF VARIABLES THAT YOU DESIRE. A SUBSET WITH GREATER THAN MAXVAR VARIABLES WILL NOT BE REPORTED UNLESS IT IS ONE OF THE BEST SUBSETS BY THE CP OR ADJUSTED R-SQUARED CRITERIA.
- TO OBTAIN THE COVARIANCE MATRIX OF THE REGRESSION COEFFICIENTS, INCLUDE CREG IN THE MATRIX STATEMENT OF THE PRINT PARAGRAPH, E.G.,
MATRIX=CORR,RESID,CREG.
- IF RESIDUALS ARE COMPUTED OR IF YOU STATE HISTOGRAM. IN THE PLOT PARAGRAPH, A HISTOGRAM OF THE STANDARDIZED (STUDENTIZED) RESIDUALS WILL BE MADE.

PROGRAM CONTROL INFORMATION:

/PROBLEM TITLE IS 'MADISON APARTMENT SURVEY'.
/INPUT VARIABLES ARE 11.
FILE IS 'MOHS.DAT'.
FORMAT IS '(F2.0,F8.0,F3.0,F8.0,4F7.0,F4.0,F7.0,F2.0)'.
/VARIABLE NAMES ARE ID,CEP,DATE,DP,PGI,PNI,AGI,ANI,UNITS, NLA,CP.
LABEL IS ID.
/REGRESS DEPENDENT IS CEP.
INDEPENDENT ARE 3 TO 11.
/PLOT NORMAL.
/END

PROBLEM TITLE:

MADISON APARTMENT SURVEY

NUMBER OF VARIABLES TO READ IN.	11
NUMBER OF VARIABLES ADDED BY TRANSFORMATIONS. .	0
TOTAL NUMBER OF VARIABLES	11

NUMBER OF CASES TO READ IN. +10 L01 +
CASE LABELING VARIABLES ID
LIMITS AND MISSING VALUE CHECKED BEFORE TRANSFORMATIONS
BLANKS ARE. ZEROS
REWIND INPUT UNIT PRIOR TO READING. . DATA. . . YES
DATA READ FROM. MOHS.DAT

INPUT FROM FORMATTED FILE:

INPUT FORMAT DESCRIPTOR:

(F2.0,F8.0,F3.0,F8.0,4F7.0,F4.0,F7.0,F2.0)

VARIABLE	CARD	COLUMN	DESCRIPTOR	VARIABLE	CARD	COLUMN	DESCRIPTOR
1 ID	1	1	F2.0	2 CEP	1	3	F8.0
3 DATE	1	11	F3.0	4 DP	1	14	F8.0
5 PGI	1	22	F7.0	6 PNI	1	29	F7.0
7 AGI	1	36	F7.0	8 ANI	1	43	F7.0
9 UNITS	1	50	F4.0	10 NLA	1	54	F7.0
11 CP	1	61	F2.0				

VARIABLES TO BE USED IN THIS PROBLEM:

2 CEP	3 DATE	4 DP	5 PGI	6 PNI
7 AGI	8 ANI	9 UNITS	10 NLA	11 CP

INDEPENDENT VARIABLES ARE

3 DATE	4 DP	5 PGI	6 PNI	7 AGI
8 ANI	9 UNITS	10 NLA	11 CP	

DEPENDENT VARIABLE. 2 CEP
NUMBER OF 'BEST' REGRESSIONS. 5
SELECTION CRITERION CP
WEIGHT VARIABLE
PRECISION DOUBLE
TOLERANCE FOR MATRIX INVERSION. 0.0001000

PRINT CORRELATION MATRIX. YES
PRINT COVARIANCE MATRIX NO
PRINT RESIDUALS NO
PRINT COVARIANCE MATRIX FOR REGRESSION COEFS. NO
PRINT CORRELATION MATRIX FOR REGRESSION COEFS NO
MAX. NO. OF VARS. IN ANY REPORTED SUBSET . . . 9

BMDP9R Page 2
MADISON APARTMENT SURVEY

DATA AFTER TRANSFORMATIONS FOR FIRST 5 CASES

CASES WITH ZERO WEIGHTS AND MISSING DATA NOT INCLUDED.

CASE LABEL	NUMBER	WEIGHT 10 NLA	3 DATE 11 CP	4 DP 2 CEP	5 PGI	6 PNI	7 AGI	8 ANI	9 UNITS
Q	1	1.00000	15.00000	300000.00000	398131.00000	214593.00000	368640.00000	202752.00000	96.00000
		88600.00000	1.00000	2247212.00000					
A	2	1.00000	36.00000	484000.00000	192024.00000	119055.00000	182881.00000	113386.00000	48.00000
		44400.00000	1.00000	1630061.00000					
QA	3	1.00000	37.00000	220000.00000	156000.00000	93600.00000	148571.00000	89143.00000	74.00000
		29600.00000	0.00000	1083862.00000					
A	4	1.00000	26.00000	500000.00000	554299.00000	266174.00000	513240.00000	246458.00000	168.00000
		141800.00000	1.00000	3203883.00000					
A	5	1.00000	1.00000	100000.00000	232080.00000	162456.00000	226920.00000	159888.00000	60.00000
		53400.00000	0.00000	1087650.00000					

NUMBER OF CASES READ. 15

BMDP9R Page 3
MADISON APARTMENT SURVEY

UNIVARIATE SUMMARY STATISTICS

VARIABLE	MEAN	STANDARD DEVIATION	COEFFICIENT OF VARIATION	SMALLEST VALUE	LARGEST VALUE	SMALLEST STANDARD SCORE	LARGEST STANDARD SCORE	SKEWNESS	KURTOSIS
3 DATE	26.66667	12.43651	0.466369	1.00000	42.00000	-2.06	1.23	-0.54	-0.96
4 DP	364952.26667	267664.82184	0.733424	25000.00000	1000000.00000	-1.27	2.37	0.89	-0.16
5 PGI	357648.53333	232420.61459	0.649858	60654.00000	861166.00000	-1.28	2.17	0.63	-0.85
6 PNI	199786.86667	132283.06363	0.662121	34977.00000	516700.00000	-1.25	2.40	0.93	-0.06
7 AGI	328478.00000	212769.57281	0.647744	55140.00000	797376.00000	-1.28	2.20	0.67	-0.76
8 ANI	181214.26667	123081.51471	0.679204	31875.00000	478426.00000	-1.21	2.41	0.96	-0.05
9 UNITS	105.40000	73.95346	0.701646	14.00000	288.00000	-1.24	2.47	0.88	-0.09
10 NLA	84240.00000	57422.36747	0.681652	14700.00000	207800.00000	-1.21	2.15	0.61	-0.96
11 CP	0.60000	0.50709	0.845154	0.00000	1.00000	-1.18	0.79	-0.37	-1.98
2 CEP	*****	*****	0.664084	343976.00000	5169988.00000	-1.25	2.32	1.03	-0.03

VALUES FOR KURTOSIS GREATER THAN ZERO INDICATE DISTRIBUTIONS
WITH HEAVIER TAILS THAN THE NORMAL DISTRIBUTION.

BMDP9R Page 4
MADISON APARTMENT SURVEY

CORRELATIONS

Spudman Research, Inc.

	DATE	DP	PGI	PNI	AGI	ANI	UNITS	NLA	CP	CEP	
	3	4	5	6	7	8	9	10	11	2	
DATE	3	1.000									
DP	4	-0.001	1.000								
PGI	5	-0.196	0.755	1.000							
PNI	6	-0.228	0.803	0.982	1.000						
AGI	7	-0.205	0.751	0.998	0.985	1.000					
ANI	8	-0.260	0.785	0.971	0.995	0.978	1.000				
UNITS	9	-0.184	0.693	0.977	0.957	0.976	0.948	1.000			
NLA	10	-0.232	0.756	0.989	0.974	0.991	0.966	0.970	1.000		
CP	11	-0.204	0.460	0.497	0.489	0.520	0.531	0.441	0.546	1.000	
CEP	2	-0.145	0.890	0.943	0.962	0.942	0.955	0.911	0.931	0.521	1.000

BMDP9R Page 5
MADISON APARTMENT SURVEY

FOR EACH SUBSET SELECTED BY YOUR CRITERION, THE R-SQUARED, ADJUSTED R-SQUARED, MALLOWS' CP, AND THE VARIABLE NAMES ARE PRINTED. THE REGRESSION COEFFICIENTS AND T-STATISTICS ARE PRINTED TO THE RIGHT OF THE VARIABLE NAMES.

MANY OTHER SUBSETS MAY ALSO BE REPORTED THAT ARE NOT ACCOMPANIED BY REGRESSION COEFFICIENTS AND T-STATISTICS. SOME OF THESE SUBSETS MAY BE QUITE GOOD, ALTHOUGH THEY ARE NOT NECESSARILY BETTER THAN ANY SUBSET THAT HAS NOT BEEN PRINTED.

**** SUBSETS WITH 1 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP	
0.924671	0.918876	4.75	PNI
0.911692	0.904899	7.47	ANI
0.889172	0.880647	12.18	PGI
0.887390	0.878727	12.55	AGI
0.866496	0.856227	16.92	NLA
0.829657	0.816554	24.62	UNITS
0.791674	0.775649	32.57	DP
0.271749	0.215730	141.30	CP
0.021112	-0.054187	193.71	DATE

**** SUBSETS WITH 2 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP	VARIABLE	COEFFICIENT	T-STATISTIC
0.963704	0.957655	-1.41	4 DP	2.11351	5.02
			7 AGI	3.99194	7.54
			INTERCEPT	-45876.2	

R-SQUARED	ADJUSTED R-SQUARED	CP	VARIABLE	COEFFICIENT	T-STAT
0.963546	0.957470	-1.38	4 DP	1.67222	3.58
			6 PNI	7.11456	r*
			INTERCEPT	5043.39	

R-SQUARED	ADJUSTED R-SQUARED	CP	VARIABLE	COEFFICIENT	T-STAT
0.963038	0.956872	-1.27	4 DP	1.84740	4.08
			8 ANI	7.33976	7.46
			INTERCEPT	32434.5	

R-SQUARED	ADJUSTED R-SQUARED	CP	VARIABLE	COEFFICIENT	T-STATISTIC	INTERCEPT
0.962811	0.956612	-1.22	4 DP	2.09053	4.87	
			5 PGI	3.67022	7.430	-38871.8
0.958198	0.951231	-0.26	DP	UNITS		
0.947300	0.938518	2.02	DP	NLA		
0.930476	0.918888	5.54	DATE	PNI		
0.928148	0.916173	6.03	PNI	CP		
0.925783	0.913413	6.52	PNI	UNITS		
0.925615	0.913217	6.56	PNI	AGI		

**** SUBSETS WITH 3 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP	VARIABLE	COEFFICIENT	T-STATISTIC	INTERCEPT
0.969282	0.960905	-0.58	4 DP	2.01901	4.53089%	4.37167 1.99
			9 UNITS	4697.05	1.50	
			INTERCEPT	12598.8		
0.968910	0.960431	-0.50	DP	PGI	ANI	
0.967726	0.958924	-0.25	DP	AGI	ANI	
0.967322	0.958409	-0.17	DP	AGI	NLA	
0.967060	0.958077	-0.11	DP	PNI	UNITS	
0.966459	0.957312	0.01	DP	PGI	PNI	
0.966157	0.956927	0.08	DP	PNI	AGI	
0.964672	0.955037	0.39	DP	PNI	CP	
0.964388	0.954676	0.45	DP	PNI	ANI	
0.964350	0.954627	0.46	DP	PGI	NLA	

**** SUBSETS WITH 4 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP				
0.969944	0.957922	1.29	DP	ANI	UNITS	NLA
0.969434	0.957207	1.39	DP	PNI	ANI	UNITS
0.968423	0.955792	1.60	DP	PNI	UNITS	CP

	r::A	PNI	UNITS	NLA		
0.967495	0.954493	1.80	DP	PGI	PNI	UNITS
0.967440	0.954417	1.81	DP	PNI	AGI	UNITS
0.967072	0.953900	1.89	DATE	DP	PNI	UNITS
0.964037	0.949651	2.52	DATE	DP	ANI	CP
0.963988	0.949583	2.53	DATE	DP	AGI	CP
0.947429	0.926401	5.99	DATE	DP	NLA	CP

**** SUBSETS WITH 5 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP					
0.973002	0.958003	2.65	DP	PGI	ANI	UNITS	NLA
0.970898	0.954730	3.09	DP	PGI	PNI	ANI	UNITS
0.970000	0.953333	3.27	DP	PNI	ANI	UNITS	NLA
0.969924	0.953216	3.29	DP	PNI	AGI	ANI	UNITS
0.969558	0.952645	3.37	DP	PNI	ANI	UNITS	CP
0.969486	0.952533	3.38	DATE	DP	PNI	ANI	UNITS
0.968716	0.951336	3.54	DATE	DP	AGI	NLA	CP
0.967845	0.949981	3.72	DATE	DP	AGI	ANI	CP
0.966491	0.947876	4.01	DATE	DP	PNI	AGI	CP
0.965895	0.946948	4.13	DATE	DP	AGI	UNITS	CP

**** SUBSETS WITH 6 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP						
0.975103	0.956430	4.21	DP	PGI	PNI	ANI	UNITS	NLA
0.973666	0.953916	4.51	DP	PGI	PNI	AGI	ANI	UNITS
0.971035	0.949311	5.06	DP	PGI	PNI	ANI	UNITS	CP
0.970925	0.949119	5.08	DATE	DP	PGI	PNI	ANI	UNITS
0.969617	0.946830	5.35	DATE	DP	PNI	AGI	NLA	CP
0.968433	0.944758	5.60	DATE	DP	PNI	AGI	UNITS	CP
0.968160	0.944280	5.66	DATE	DP	PNI	AGI	ANI	CP
0.967774	0.943605	5.74	DATE	DP	PGI	PNI	AGI	CP
0.950592	0.913536	9.33	DATE	PGI	PNI	AGI	NLA	CP

**** SUBSETS WITH 7 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP
-----------	-----------------------	----

	ADJUSTED									
0.975643	0.951286	6.09	DP	PGI	PNI	AGI	ANI	UNITS	NLA	
0.975377	0.950754	6.15	DP	PGI	PNI	ANI	UNAS	NLA	CP	
0.975347	0.950693	6.16	DATE	DP	PGI	PNI	ANI	UNITS	NLA	
0.973164	0.946328	6.61	DATE	DP	PGI	PNI	AGI	ANI	CP	
0.970489	0.940978	7.17	DATE	DP	PGI	PNI	AGI	NLA	CP	
0.969361	0.938721	7.41	DATE	DP	PGI	PNI	AGI	UNITS	CP	
0.950671	0.901341	11.32	DATE	PGI	PNI	AGI	UNITS	NLA	CP	

**** SUBSETS WITH 8 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP								
0.976064	0.944150	8.01	DP	PGI	PNI	AGI	ANI	UNITS	NLA	CP
0.975673	0.943237	8.09	DATE	DP	PGI	PNI	AGI	ANI	UNITS	NLA
0.975654	0.943192	8.09	DATE	DP	PGI	PNI	ANI	UNITS	NLA	CP
0.975339	0.942457	8.16	DATE	DP	PGI	AGI	ANI	UNITS	NLA	CP
0.974226	0.939861	8.39	DATE	DP	PNI	AGI	ANI	UNITS	NLA	CP
0.974057	0.939467	8.43	DATE	DP	PGI	PNI	AGI	ANI	UNITS	CP
0.974055	0.939463	8.43	DATE	DP	PGI	PNI	AGI	ANI	NLA	CP
0.974046	0.939441	8.43	DATE	DP	PGI	PNI	AGI	UNITS	NLA	CP
0.951761	0.887442	13.09	DATE	PGI	PNI	AGI	ANI	UNITS	NLA	CP

**** SUBSETS WITH 9 VARIABLES ****

R-SQUARED	ADJUSTED R-SQUARED	CP								
0.976091	0.933055	10.00	DATE	DP	PGI	PNI	AGI	ANI	UNITS	NLA CP

BND89R Page 6
MADISON APARTMENT SURVEY

STATISTICS FOR 'BEST' SUBSET
MALLOW'S CP -1.41
SQUARED MULTIPLE CORRELATION 0.96370
MULTIPLE CORRELATION 0.98168
ADJUSTED SQUARED MULT. CORR. 0.95766
RESIDUAL MEAN SQUARE 77465320640.922566
STANDARD ERROR OF EST. 278325.925204
F-STATISTIC 159.31
NUMERATOR DEGREES OF FREEDOM 2
DENOMINATOR DEGREES OF FREEDOM 12
SIGNIFICANCE 0.0000

VARIABLE NO.	NAME	REGRESSION COEFFICIENT	STANDARD ERROR	STAND. COEF.	T- STAT.	2TAIL SIG.	1UL- ERANCE	CONTRIBUTION TO R-SQUARED
	INTERCEPT	-0.458762D+05	0.137410D+06	-0.034	-0.33	0.744		
4	DP	0.211351D+01	0.420761D+00	0.418	5.02	0.000	0.436241	0.076315
7	AGI	0.399194D+01	0.529318D+00	0.628	7.54	0.000	0.436241	0.172031

THE CONTRIBUTION TO R-SQUARED FOR EACH VARIABLE IS THE AMOUNT
BY WHICH R-SQUARED WOULD BE REDUCED IF THAT VARIABLE WERE
REMOVED FROM THE REGRESSION EQUATION.

BNDP9R Page 7
MADISON APARTMENT SURVEY

SUMMARY STATISTICS FOR RESIDUALS

(CASES WITH POSITIVE WEIGHT)

AVERAGE RESIDUAL	0.0000
RESIDUAL MEAN SQUARE	77465320640.92256572
AVERAGE DELETED RESIDUAL	-15137.3083

AVE. SQUARED DELETED RESIDUAL

(PREDICTION MEAN SQUARE) *****(***)(***)

SERIAL CORRELATION -0.3719

BURBIN-WATSON-STATISTIC-----2.6795-----

HISTOGRAM OF STANDARDIZED (STUDENTIZED) RESIDUALS
EACH BIN OF THE HISTOGRAM IS LABELED WITH ITS LOWER LIMIT.
NOTE THAT IF THE COUNT FOR A BIN EXCEEDS 100, ONLY
100 ASTERISKS WILL BE PRINTED.

-2.6	1 *
-2.4	0
-2.2	0
-2.0	0
-1.8	1 *
-1.6	1 *
-1.4	0
-1.2	0
-1.0	0
-0.8	0
-0.6	0
-0.4	1 *
-0.2	1 *
0.0	1 *
0.2	3 ***
0.4	3 ***

0.6	1 *
0.8	0
1.0	1 *
1.2	0
1.4	0
1.6	0
1.8	1 *

6.04 IS THE MAXIMUM VALUE OF MAHALANOBISDISTANCE AMONG CASES WITH
POSITIVE CASE WEIGHT. THIS OCCURRED FOR CASE NUMBER 11, CASE LABEL = 0B

-2.46 IS THE LARGEST STANDARDIZED RESIDUAL (IN ABSOLUTE VALUE) AMONG
CASES WITH POSITIVE CASE WEIGHT. THIS OCCURRED FOR CASE NUMBER 11, CASE LABEL = 0B

1.99 IS THE MAXIMUM VALUE OF COOK'S DISTANCE AMONG CASES
WITH POSITIVE WEIGHT. THIS OCCURRED FOR CASE NUMBER 11, CASE LABEL = 0B
IF THIS CASE WERE OMITTED, THE REGRESSION COEFFICIENTS WOULD
MOVE FROM THE VALUES REPORTED ABOVE TO THE EDGE OF A 82.13
PERCENT CONFIDENCE ELLIPSOID.

COMPARISON OF ESTIMATES OF REGRESSION COEFFICIENTS
(RELATIVE DIFFERENCE IS DIFFERENCE DIVIDED BY ORDINARY COEF.
STANDARD ERROR IS THAT OF ORDINARY COEFFICIENT.)

	ORDINARY LEAST SQUARES	OMITTING CASE WITH LARGEST COOK DISTANCE	RELATIVE DIFFERENCE	DIFFERENCE DIVIDED BY STANDARD ERROR
INTERCEPT	-45876.249472	-32123.021828	0.2998	-0.1001
4 DP	2.113508	1.226944	0.4195	2.1070
7 AGI	3.991942	5.130904	-0.2853	-2.1518

NUMERICAL CONSISTENCY CHECK

RESIDUAL MEAN SQUARES ARE COMPUTED FROM BOTH COVARIANCE MATRIX AND RESIDUALS, AND
RELATIVE DIFFERENCE (DIFFERENCE DIVIDED BY SMALLER OF TWO ESTIMATES) IS COMPUTED.

RESIDUAL MEAN SQUARES COMPUTED FROM

COVARIANCE MATRIX

RESIDUALS

RELATIVE DIFFERENCE

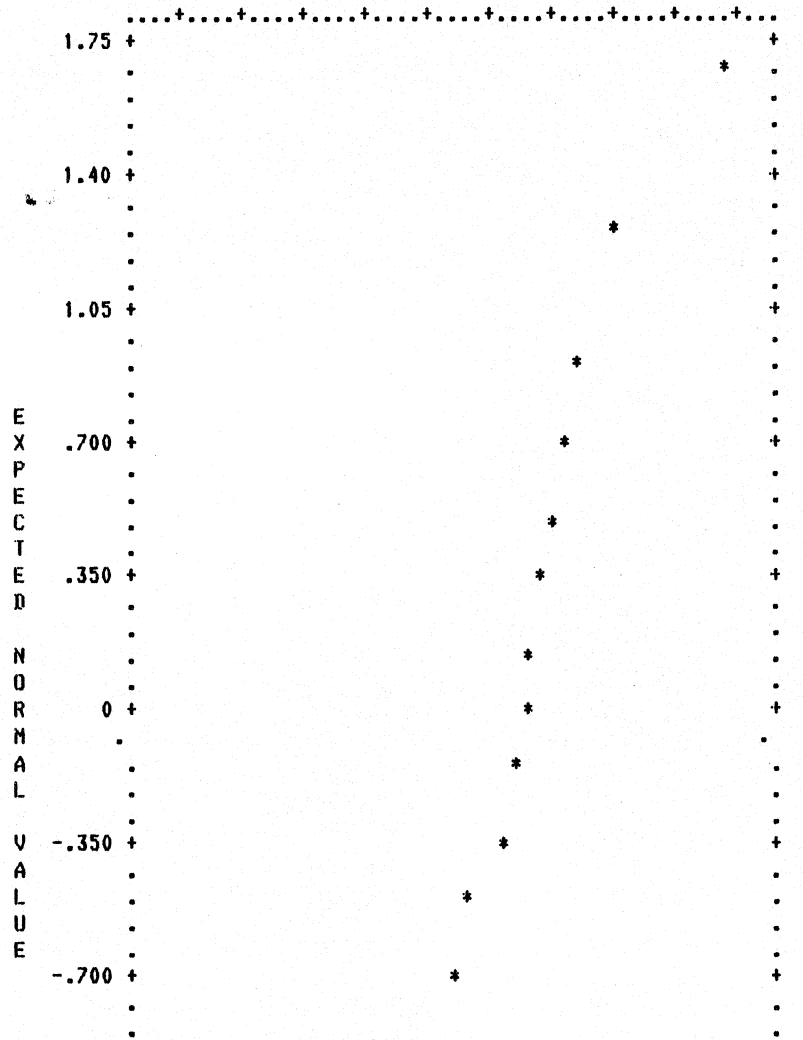
0.774653D+11

0.774653D+11

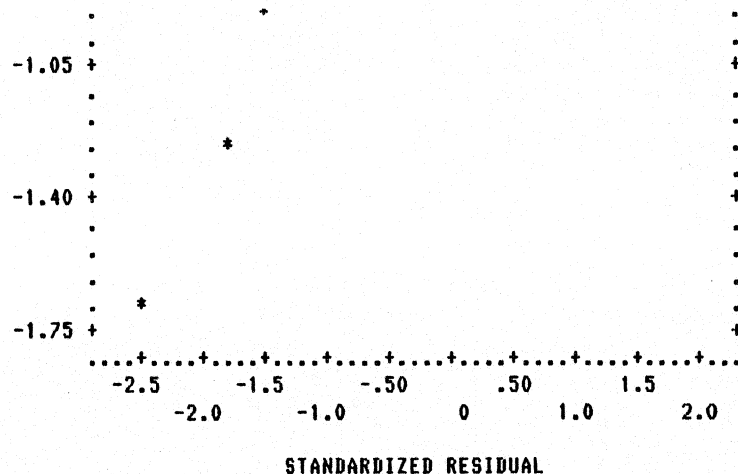
-0.467817D-15

BMDP9R Page 8
MADISON APARTMENT SURVEY

NORMAL PROBABILITY PLOT FOR STANDARDIZED RESIDUALS



Landmark Research, Inc.



PROBLEM NUMBER 1 COMPLETED.

BNDP9R V2.1 30-Jul-81 11:53:36

Program revised: December 1979 Manual revised: July 1979
 (c)1979, The Regents of the University of California
 Licensed for PDP-11 by Software Development Inc.

Site: (2-080) U. Wisconsin School of Business
 Expiration date: February 1981

PROGRAM CONTROL INFORMATION:

NO MORE CONTROL LANGUAGE...

PROGRAM TERMINATED NORMALLY
 SPACE USED 1697 (OUT OF 5000 AVAILABLE)
 CPU TIME: 0.13 ELAPSED TIME: 0.52 (MINUTES)

Ready

BYE/Y
 Saved all disk files; 2080 blocks in use, 1920 free
 Job 27 User 150,30 logged off KB71 at 30-Jul-81 12:11
 System RSTS V7.0-07 MACC*WITS*A

EXHIBIT C

McCLOUD B. HODGES, JR.
REAL ESTATE INVESTMENT, VALUATION AND COUNSELING
410 PINE STREET, SUITE 203
VIENNA, VIRGINIA 22180 703 - 281-5668

MASS APPRAISAL OF INVESTMENT CLASS PROPERTIES

ABSTRACT: Within the last sixteen years, due to continuous monetary inflation, radical changes have been seen in the pricing of, and feasibility decisions on investment classed real estate. Within this time, Federal tax treatment of real estate revenue has become more complex; accountants, tax attorneys and institutional mortgage lenders have adopted the after-tax cash flow calculus of the real estate investor-developer markets; sellers in this market have, by their infusion of secondary financing, created illusionary distortions of market value; real estate appraisers-assessors have clung to obsolescent valuation methodology; tax assessors in most jurisdictions are denied access to critical market data; real estate tax appeals have increased; tax tribunals and the judiciary have mainly failed to clarify the meaning of taxable value; and there is now no capability by assessors-appraisers in estimating "market value" within a reasonable range unless they gain access to important data in market transactions and make use of computer tools adaptable to mass appraisals. Most of the improvement in valuation methodology depends neither upon income tax calculations nor after-tax cash flow. The market-extracted overall rate procedure, deservedly maligned for its careless anatomy and application, can be resurrected, rehabilitated and made to serve assessors-appraisers quite objectively in computer assisted mass appraisals.

* * * *

The history of the art and science of *modern* real property valuation and market analysis extends no further back than the decade of the 1920's and to the original writings of Irving Fisher, Richard M. Hurd, Frederick M. Babcock and Henry A. Babcock. Fred Babcock's 1932 text, *THE VALUATION OF REAL ESTATE* is considered the first important reference and authority for using income capitalization as the primary method in evaluating investment-class real estate. However, in 1924, he had written his first book, *THE APPRAISAL OF REAL ESTATE* (Macmillan Co.) for the "Land Economics Series" edited by Richard T. Ely, in which he said:

"The income produced by rented properties is the measure of their values. Purchasers of income-producing property are usually actuated by the investment motive, and the amounts which they are willing to pay for properties are functions of the income. Therefore the processes of appraising in which income analysis is involved are used for most kinds of business property which is rentable to tenants. . . The procedure is applicable to all real estate which produces tangible rentals from tenants. Thus the method not only applies strictly to business property but is capable of application to rented residential property, notably to apartments. When appraisal by income analysis is at all expedient, it is usually the preferred appraisal procedure. . ." ²

Following the inflationary effects of World War I, there was a twelve-year period of general recession in the commodities price index and simultaneously, but in a limited number of urban regions, much speculation in commercial and multifamily residential real estate. Such ventures were largely financed through real estate bonds and mortgages secured by notes against the properties, due within two to five years. The long-term, amortizing, level-

payment mortgage loan was not to be inaugurated until the Federal Housing Administration was created in 1934. Real estate investors and speculators in the 1920's, due primarily to faulty appraisal procedures and over-extended credit, suffered numerous losses as did their financiers (not unlike REIT and commercial banks in the early 1970's). All this preceded the general stock market collapse in 1929 but was not given nearly as much publicity as the stock market.

In the United States, there were no organized bodies of real estate appraisers before the founding of the American Institute of Real Estate Appraisers by the National Association of Real Estate Boards in 1932. However, by 1928, due largely to the poor condition of the real estate market, the N.A.R.E.B. had a very active Appraisal Division. This Division had a Committee on Standards of Appraisal Practice. Its chairman was Henry Babcock who reported to the N.A.R.E.B. membership in its Louisville, Kentucky, meeting, June 21, 1928:

"The practice of an appraiser arriving at the value of a property by adding fractional appraisals of its parts (called a summation appraisal) is condemned as unsound, inaccurate, and in many cases dangerously misleading . . . Those classes of property which produce or are intended to produce benefits in the form of net earnings are said to have an *investment* value. Investment Value is the present worth of the earning expectancy. Investment Value is measured by estimating the earning expectancy and computing the present worth at a rate percent based on the risk involved." 3

By 1931, in an effort to raise the standards of practice of its members, N.A.R.E.B. published a book entitled REAL ESTATE APPRAISALS, a collection of articles and example appraisals by contributing members of the Appraisal Division, edited by Henry Babcock, from whose lead article, "Real Estate Appraising and Loan Failures", are these words:

"To set up a sound loan on an investment property, an accurate forecast of its earning power is essential. The market value of the property is, at most, of incidental importance. The growing realization of this fact is one of the outstanding features of the progress of real estate appraising during the last decade. The difficulty of making accurate earnings forecasts and the ease of making cost-of-reproduction appraisals in no sense alters the validity of the statement.

"The cost-of-reproduction school has at least been driven to a recognition of this principle. They now admit that 'the value cannot exceed the earning's value'. Ultimately, they will come to see the 'earning's value' is the value. The great argument of the cost-of-reproduction school is that their appraisals are 'more conservative'; a sort of a *posteriori* justification. Even this contention does not hold. If there is one point above all others which has been demonstrated since the collapse of the real estate market in 1928, it is that loans based on cost-of-reproduction figures are not insured against default. As a matter of fact, due to the lag between construction costs and rentals, discussed by Schmutz and McCormick in an article in this volume, in periods of rising commodity prices before rentals have caught up, the cost type of appraisal will overvalue the property; and, in periods of declining commodity prices before rentals have declined, a capitalization of current rentals will overvalue the property."

In the article credited to Schmutz and McCormick, entitled "Real Estate Prices", at a time when first mortgage interest rates hovered around 6%, the writers mention that the overall rate covering both the equity and the creditors position in property might be 7½% during a period of static commodity prices, 6½% during a period of rising commodity prices, and 9.37% during a period of falling commodity prices. In the closing paragraph these authors wrote:

"While falling commodity prices tend to increase the overall rate, such increases or decreases to the normal overall rate we must interpret as insurance premiums

demanding for expected changes in the money value of property. A careful checking of the past discloses the fact that humanity as a whole, and appraisers and valuation engineers are no exception, tend to *overestimate favorable factors* and to *underestimate unfavorable ones*, and in order that the appraiser fit himself intelligently to recommend regarding investments, he must of necessity extend his knowledge beyond the point where he can but estimate with reasonable accuracy present market prices."

In the same N.A.R.E.B. book the late Joseph B. Hall of Cincinnati, who became the second president of the Appraisal Institute and still later the president of the Kroger Corporation, described in an article entitled "Wholesale Appraisal for Taxation Purposes", the revaluation of all taxable properties in Chicago and Cook County, in which a depreciated reproduction cost method was employed, and a standard cost manual used, to obtain speed and uniformity over the 920 square miles and 1,000,000 parcels of real estate. Hall mentioned that,

"The term 'wholesale' indicates that the detailed analysis of the elements of the property value necessary in the appraisal of individual properties is not possible. The determination of net income as a basis of value is prevented by the size of the undertaking . . . The size of the undertaking requires the establishment of uniform methods and rules which reflect average conditions. The inaccuracies that occasionally arise as a result of the adoption of methods and rules can be adjusted . . . Simplification of procedure is desirable in order to make the system understandable to the ordinary taxpayer and to insure the continuation of the system as established."

Hall, in describing the kind of people who made the Cook County reassessment:

"These men were mostly graduate engineers, contractors, and men familiar with building construction. They were furnished with building manuals and depreciation schedules in addition to the property record cards . . . Depreciation was then determined and the allowances for the various classes shown."

But Hall later added:

"I have always contended that appraisals should be based on income with the value of the land and building added together serving as a check, along with sales of entire properties which are comparable. Such approach, however, is not feasible for each property in a wholesale appraisal. The process is thus reversed, using the income figures for the property where furnished and substantiated as a check against the valuations placed separately. And corrections are often justified. It is difficult to estimate accurately the obsolescence on a building without reverting to income."

In a recent conversation with Fred Babcock it was his recollection that the railroad property appraisals made by the Interstate Commerce Commission in the approximate time between 1895 and 1912, performed under the replacement cost method, had a profound adverse effect on appraisal technique. The dearth of adequate market sales data, especially among utilities and other publicly owned properties, was disturbing to other observers of the ad valorem tax, as attested by Jensen in 1931 4:

" . . . The best opinion seems to be that no one principle or method will give satisfactory results. The laws seldom prescribe detailed rules and procedure for valuation, though they may prescribe that one or more of the three methods must be used. Doubtless, experience has taught that no set of rules and measures of value can be legally prescribed that will give reasonable results in all cases and will withstand attack in the courts. The assessing bodies likewise seldom show the precise methods used in arriving at the taxable value though they may state the factors that influenced their judgment. The reticence on the part of the tax commissions again is doubtless due, in large measure, to

the necessity of avoiding the mass of litigation that would follow if the precise methods of arriving at the valuation were always given in detail . .

"To make possible the adequate assessment of property for which there is no market and of which sales are so few and unrepresentative as to furnish no criterion for a basic value, a much more revolutionary remedy is required. It will be necessary to develop and to secure constitutional, statutory, and judicial sanction for some other value than market value, a constructive market value perhaps, to take the place of the contemporary expert guesses as to market value which prevail largely because there is no actual market value against which they can be checked . . .

"The assessed values now arrived at by administrative tax commissions are not market values; they are constructive market values, analogous to those that must be sought for all such property as cannot be assessed on the basis of market value. The courts have also sanctioned the constructive market value where the corporate excess, the total value of a corporation in excess of its physical property, is taxed. We cannot be so sure that they have sanctioned it as fully for such nonutility property as factories, office buildings, hotels, and mercantile places of business. The technicians have also made progress. Constructive market value is in fact the tax base for much real property in many cities. Inasmuch as the courts or the legislatures cannot be expected to go much farther in sanctioning constructive market value until technicians have demonstrated its possibilities as a fair tax base, we shall now point out what these administrative methods are and what is required in order that they may succeed.

"It is well to bear in mind that constructive market value need not be a perfect basis to be justified in preference to the market value, now supposedly used, for some classes of property. For market value is never a perfect basis. Those opposed to the use of sales value as a check upon assessed valuation argue correctly that the sales prices are not always representative . . .

"All that is necessary to justify constructive market value is that it shall be no worse than market value. For certain classes, for which there is no market value, it could not possibly be worse.

"Inasmuch as the factors that affect the value of property vary greatly according to the character of the property, different formulas must be set up for each major type of property . . . "

Toward the end of the Great Depression years there were voices heard even from administrators of the property tax indicating their favor of the income capitalization procedure but expressing either the difficulties or the reasons why it would not be possible to depend upon it. One such speaker was John A. Zangerle, then the Auditor of Cuyahoga County, Ohio :

"Real estate boards, owners, and especially expert appraisers demand that assessments be based on income - past income in some cases, estimated future income in other cases, whichever will bring home the bacon in tax reduction cases. It is because these complainants do not appreciate the difficulties and problems generally involved in such an approach by the assessor that this demand persists . .

"After the earnings statement is secured by the assessor, after conferences with the owner as to the importance, significance and normalcy of the expenses and income shown, after the normal depreciation charge has been deducted, we still come to the most important problem of all, viz., the capitalization rate. Net income of \$40,000, capitalized at 4 per cent, would amount to a value of \$1,000,000; on the other hand, a 7 percent capitalization would amount to \$570,000. Experts, working independently, violently disagree as to the proper capitalization rate, which must, in the nature of things, vary with location . . .

"If the taxing authorities are to appraise as seriously and contentiously, involving such differences, I shudder to think of the resulting anarchy in the real estate assessing activity. In a county of this size, over 600 high salaried assessors would be necessary. This would represent an extra force, since the income appraisal process is generally checked to the physical valuation of the building and the market or comparative value of the land . . .

"When real estate appraisal experts arrive at some definite formulas for arriving at net income and expenses and interpretation of such figures, some headway will be made toward making income the prime basis of assessment. However, they would soon decry its use as the sole basis, for too many owners of highly improved properties appreciate that lightening the burden of underdeveloped and undeveloped property would involve an undue burden to the former.

"Some experts freely admit that income should not be the sole basis of assessment, but contend that it should enter more 'strongly' in appraisals by assessors . . .

"Most experts insist, and this is borne out by prominent writers, that net income is the sole, unadulterated and final basis. In my opinion, assessment of real estate of all classes of property based on the income thereof, past, present or future, would never survive a trial anywhere in the United States. It might be attempted in a small taxing jurisdiction provided the results were not publicized . . ."

The use of the depreciated replacement cost in valuation of income-producing property, hereinafter called *investment* property in accordance with Henry Babcock's basic 1968 text, APPRAISAL PRINCIPLES AND PROCEDURES, has been given far less credence by private appraisal practitioners since the mid-1960s. But it remains, strangely, the primary method used by ad valorem tax officials in nearly all the states. Response to a comprehensive questionnaire sent early in 1981 to all 50 states and the District of Columbia, concerning only their procedures in analyzing sales of, and valuing, investment properties for purposes of taxation, shows that tax assessors place approximately 64% of their final valuation weight on the depreciated cost, 18% on the sales comparison, and 18% on the income approaches. The tax appeal court of one state has ruled that its state law requires use of the cost approach as the primary method for improved properties, although condominium apartments in that state are valued by market comparison. Another state acknowledges that its assessors do very little market analysis, and then only for assessment-sales ratio studies, stating also that it has no provision for using the income approach on commercial properties. One state requires the use of the market, income and cost approaches where applicable; and its courts have held that assessors may use whatever data are available to arrive at a correct value. Several states acknowledge that the capitalization of income approach is used only upon the appeal of an assessment by the taxpayer. Two states claim that the depreciated cost approach lends itself to mass appraising.

It seems that the study of land economics and the application of economic and market analysis, prior to the heyday of John Maynard Keynes and his enthusiastic followers, were included in the "dismal science" as economics was so often described. But with the industrial revolution in America, and the rapid advancement of the science of mathematics and engineering, it probably seemed logical to state and local municipalities, who inherited the property tax from the Federal government early in this century as the primary source of revenue, to employ engineers and contractors rather than real estate brokers and economists for their mass appraisal work. After all, contractors and engineers could use methods the public could understand. Furthermore, property taxes in the first three decades of the century were a much smaller fraction of capitalized property value. State and local government budgets were relatively small by comparison with the property tax base. These factors, combined with the practice of assessing properties at a small fraction of their full market value, all but eliminated complaints and formal appeals from investment property owners.

The sovereignty of the depreciated cost approach derived from its almost exclusive use in the 1920's when municipalities began paying attention to their tax rolls but did not find enough sales transactions in most urban regions for measuring price and value. While in a few regions there was immense speculative inflation in certain kinds of properties, there was a general depression in most other kinds. It had commenced before the stock market depression in 1929 and lasted well into the 1930's.

During those two decades there arose the "valuation engineers" who were hired by banks and by governments at all levels, to evaluate investment properties. Not well versed in the 250-year old concept of capitalizing future revenue into present worth, these engineers relied upon reproduction costs and "structural" depreciation. They influenced the tax assessor and the future practice of property taxation by publishing cost manuals and tables for computing accrued physical depreciation. Valuation engineers, as they were actually named in many states, preceded today's tax assessors. They successfully imparted their skills in the use of cost manuals and depreciation tables to their subordinates and growing staffs of municipal employees. During the National Recovery Act era of the first two Roosevelt terms, employment was found for many WPA workers in assisting the valuation engineers in their mass appraisals using the depreciated cost method.

In the majority of taxing jurisdictions today the cost approach remains extremely popular. It does, in fact, despite all of its erroneous valuations of investment properties, lend itself to mass appraising. Once the physical features and dimensions of a property are placed upon the property card, and the reproduction cost of the buildings and appurtenant structures have been calculated, it is a simple, expedient task to re-evaluate the improvements at any future time by adjusting the cost by an index factor. Similarly, the amount of depreciation can be adjusted in proportion to the time transpired since the last preceding valuation.

Karl E. Case criticizes the summation approach by saying,

"While such a procedure is likely to prove accurate for estimating the value of characteristics that can be easily added to or removed from existing structures, it provides little guidance for valuing locational characteristics or characteristics whose values are in part made up of quasi-rents." 6

James W. Martin claims,

" . . . that the major deficiencies in the cost approach of estimating value have made it meaningless for general application. And if this had not already been so, the extraordinary price revolution that has occurred in recent years certainly has finished the job. Of course, it has been my feeling that the cost approach as a method of estimating value had been finished many years ago. It has taken longer to persuade some of my colleagues, but I now think that even the most steadfast of them feel that the cost approach to valuation has, at most, a very limited value. It is my opinion that if you look at the thing without reaching your conclusion before you start the valuation process, there is no way in which you can use it, at least in general application." 7

Not all real estate appraisers were tied to the cost approach. The firm of William H. Babcock and Son, located in Chicago in the 1920's, was one of those which relied upon income capitalization; and it performed many assignments in valuing real estate bonds secured by investment class properties. Nevertheless, until Leon W. Ellwood first discussed the mortgage-equity procedure in the 1950's and printed the first edition of his text in 1959, a tiny minority of practicing appraisers, but almost no tax assessors, relied upon capitalization procedures. The Ellwood pre-tax-cash-flow capitalization technique did not supplant the straight line depreciation, building and land residuals for another ten years, and then only in the hands of some independent appraisers.

The responses to the referenced survey reveal that tax assessors rely mainly on overall cap rates (direct capitalization) shown by market sales, followed closely by straight-line (indirect) capitalization with its assumed annual declines in net income over the estimated economic lives of the buildings. The reply from one state was that its state tax commission manual detailing income capitalization methods has been optional, but by July, 1983, its use will be mandatory.

FORCES COMPELLING MODERNIZATION

Since the purpose of this article is to suggest three small, forward steps in applying the electronic computer to mass appraisal of investment properties, it is necessary to look into the reasons for taking such steps, beginning with recent public criticism of tax assessing procedures.

"The most publicized and the most serious administrative fault of the general property tax is inaccurate assessment. The inaccuracy may result either from underassessment or from deviation of individual property values from the general assessment ratio of the taxing jurisdiction." 9

While the authors of this statement were concerned more with undervaluation of specific properties, in reference to earlier days "when state governments allotted local shares of a state general property tax according to local assessed valuation [and] local units perceived that an easy way to cut their shares was to reduce their valuation", there are also numerous criticisms of overvaluation which is just as responsible for producing an intolerable deviation from the mean assessed ratios. Diane B. Paul has written,

"Specifically, Shannon [Dr. John Shannon, Advisory Committee on Intergovernmental Relations, Washington, D.C.] concludes that in 85% of the cities analyzed, income-producing property was assessed at a higher ratio of value than were homes. Of the 24 cities in the sample with a population of over one-half million, only 3 appeared to favor owners of income-producing property. Deliberate overassessment of income-producing property has been a persistent feature of big city tax structures. Because it is largely invisible, however, those who benefit from the maintenance of interclass differentials are usually ignorant of their interests in the status quo and sometimes act to upset it. Most often they act through the court, since city officials, even when pressed, are hesitant to implement reforms. They understand the consequences of reform even if homeowners do not. To protect their informal and extra-legal structures of assessing, some states have adopted property classification schemes which allow communities to tax different types of property at different ratios of market value - and so legalize traditional practice." 9

Referencing the City of Boston, Paul again says,

"Applications are filed on from 18 to 23 percent of commercial, industrial and apartment properties (5 units or more) a year. One reason for the large number of appeals is that abatement lawyers receive contingency fees - from 20 to 33 percent. So, some property owners file every year 'just to see where it gets them'. Another reason is that assessments are not adjusted after an abatement is granted by the Board of Review. That is, a building assessed at \$10,000 which is found overassessed by the Board will the following year be assessed again at \$10,000. This is known as the 'abatements racket', partly because of the lucrative work it provides for abatement lawyers, many of whom have political connections, and partly because it multiplies the opportunities for city officials to manipulate abatements for their own ends. As noted earlier, assessments in general and abatements in particular are areas of very low public visibility." 10

Real property taxes have, meanwhile, risen to become a substantial part of the operating expenses of investment properties. As a consequence, the tax courts in states so equipped,

and the appellate and higher courts are encountering a geometric increase in the numbers of tax appeals, even though the time required for the highest level of appeal is also increasing. In one eastern seaboard state the tax court is so logjammed with appeals that for the last several years the taxpayer has been delayed an average of four years for a scheduled hearing at that level; and another four years would be expected to reach the state supreme court through two intermediate court levels.

For evidence of the increasing numbers of appeals of investment property assessments, this writer and his associates have conducted a rather exhaustive law library search of reported decisions over the last 20 years, involving only these particular elements of valuation:

- * Cash value v. nominal sales price as basis for ad valorem taxation.
- * Actual v. estimated net operating income as more or less meaningful than net income in comparable properties.
- * Net income capitalization as the preferred method and index of value.
- * Relationship of true cash value and fair market value.
- * Capitalization of net income before RE taxes, adding the tax rate to the cap rate for accuracy in valuation.
- * Economic rent v. contract rent.
- * Apartment rental rates: the presumption of their adequacy.
- * Sale-leaseback as representative of a normal market sale.
- * Effect of actual market conditions on capitalization rates.
- * Effect on price paid for a property when seller takes an unusually large purchase money mortgage.
- * Acceptance of the mortgage-equity formula due to factors employed as reducing differences between comparables, and minimizing errors in valuation.
- * Evidence of property value as affected by the income tax shelter derived by a particular owner.
- * Validity of the capitalization rate and net income figures if they exclude consideration of acknowledged, numerous current and future replacements.

No attempt has been made to interpret the courts' decisions. This is a matter for lawyers and the judiciary. Nevertheless, the assessor-appraiser would gain immense knowledge by reading as many decisions as can be found under the heading of "Taxation" in the WEST NATIONAL REPORTER SYSTEM. Just as important, a reading of the numerous cases under the heading "Eminent Domain" would reveal past and current thinking by the courts regarding some of the valuation methods under attack; and the recognized difference between nominal sales price and cash equivalent value, a subject of immediate concern to the International Association of Assessing Officers. Attention is invited to the space given this subject in the I.A.A.O.'s 1978 text, IMPROVING REAL PROPERTY ASSESSMENTS. Cash equivalent value was also emphasized by the State Board of Equalization of California, a state in which tax assessment procedures were far advanced over most other states before the advent of Proposition 13.

This writer, having noticed the predominance and the price influence of seller-financing in the sales of investment properties, began several years ago to intensively study the mass market and compile a detailed catalog of property resales with their actual mortgage terms and their actual or budgeted first year net operating incomes. The study, thus far, covers only the Maryland and Virginia suburbs of the Washington SMSA, and sales occurring from 1975 through 1980. The buyers, sellers and/or management agents of 87 properties (office buildings, shopping centers, and multifamily apartments not sold for immediate conversion to condominium) have been willing to cooperate in this study provided, in most instances, that their specific property income and mortgage data remain confidential. Only the resulting list of overall cap rates and assessment-sale ratios, together with the cash-equivalent values and the kinds of properties involved, has been printed and distributed - and then only for general information of valuation students, academicians and, of course, the sources of the data. Discounting of existing, assumed first mortgages and of new secondary mortgages taken

- 9 -

by sellers has been carefully performed with the assistance, in some instances, of bankers and brokers in the mortgage money business. By total number of properties from \$400,000 to \$19,000,000 in cash-equivalent value, this study has shown:

	Overall Cap Rate		Assmt./Value Ratio	
	Mean	S.D.	Mean	S.D.
Office Buildings	.0989	.0241	110.4%	33.3%
Shopping Centers	.0978	.0145	114.2%	16.8%
Multifamily Apartments	.1099	.0227	110.6%	27.3%

That the number of assessment appeals is increasing just in this particular SMSA is easily explained by the above figures. Inequity of taxation between owners of investment properties and owners of single family residential is again proven by still another study this author made in the same general time period, of the assessment/sale ratios in the ten most expensive residential subdivisions in each of several of the same suburban D.C. communities, wherein he found mean ratios of from 74% to 94%, but smaller deviations than among the investment properties. These residential single family statistics, however, must be viewed in light of the fact that SF home prices have inflated at rates greater than for all three types of investment properties studied. Assessments made for a tax year beginning January 1st are more likely to be out-of-date by December 31st.

But inequality of assessments is the subordinate issue. Tax equalization quality is automatically derived from *quality* of valuation. Improvement in valuation accuracy leads to improved equalization. One of the causes of both excessive and unequal tax valuation of investment properties is the blindfold which the assessor is compelled to wear by state legislatures and local governments in their failure to recognize the mechanisms of the market, and to provide for full, annual disclosure of critical market data needed by the assessor. It is feared that the blindfolded assessor in many jurisdictions accepts his condition as legal excuse and authorization to look only upon the nominal sales prices discerned in the daily abstracts furnished him by the clerk of the court, and to guesstimate the other factor, NOI, needed for the cap rate, R.

The advancement and modernization in the use of market data in the valuation of investment properties is extremely important to the future of real estate appraising if it is ever to become publicly recognized as a professional occupation. There are reported to be about 60,000 tax assessors in the nation. It is inescapable that assessors fix the public's image of the appraisal business. Nine years ago this writer conducted a mail survey of some 250 ordinary citizens in the D.C. region. The questionnaire was not mailed to persons in the real estate industry or in mortgage banking, or to persons in government who regularly use the services of appraisers. Only a few of the questions and replies will be reported herein as applicable to the subject of this article. 67% of the respondents did not believe that a fee appraiser can be a full-time practitioner devoted exclusively to RE appraising without other functions such as brokerage, land development, etc. 85% did not know the meaning of the initials, ASA, CRE, MAI and SRA. 60% did not think of real estate appraisers as occupying salaried, staff positions in Federal, state and local government, and in banks and mortgage lending institutions. 72% of the respondents would not place upon the real estate appraiser who made the original mortgage loan appraisal, the blame for the financial predicament resulting from a mortgage foreclosure upon an investment property.

If it is correct to say that the future of the professional status of real property investment valuation and analysis will be primarily dependent upon the practice of governmental and institutional appraisers - predominantly tax assessors - then, a few steps must be taken immediately to recognize and accomodate the growing complexity of both data analysis and valuation methodology. It is in this class of property where opinions of value are now most heavily divergent and confusing even to those in the judiciary who have studied numerous litigated cases and have become, in some states, specialists in this type of property.

Based upon this writer's experience since 1968 in analyzing resales of investment properties, it is submitted that the seven principal factors which determine prices paid for these kinds of properties in the price range above approximately \$300,000 are:

- * Net income forecast for the ownership term.
- * Forecast net resale or exchange value.
- * Mortgages - amounts, rates and terms.
- * Ratio of depreciable capital assets to total property cost or price.
- * Age and condition of capital assets and forecasts of replacements during ownership.
- * Ownership form and income tax situation for the most probable buyers of the property.
- * Equity yield required in the competitive market, commensurate with total property cost or price, or amount of cash invested.

These factors are fundamental to all after-tax-cash-flow valuation procedures. There are several broker and appraiser formulas not encompassing all of these factors which are classified as rule-of-thumb, but are often useful in listing properties for sale and in preliminary buy/sell negotiations.

It is not necessary, however, to incorporate all these seven factors in any of the first few steps recommended for appraisers and assessors in advancing their techniques for data analysis and valuation of investment properties. The most important factors, net income and mortgage financing - and a third factor, equity yield, approximately derived within the OAR as will be seen in the regression analysis of market data - are believed to be quite sufficient in improvement of valuation accuracy. Since it is the purpose herein to demonstrate a more sophisticated utilization of the OAR which is slowly gaining some popularity with tax assessors, the effect of just one factor, financing, must be shown in Exhibit One:

Exhibit 1

EFFECT OF FINANCING ON PRICE AND VALUE

What can a partnership of four married individuals pay for a ten-year-old good quality apartment complex under 3 different sets of financing and certain other factors?

Factors constant in all 3 analyses:

- * Net income before RE taxes starts at \$350,000 and rises on a 4% slope in real \$.
- * RE tax rate = .0121; assessed value = sale price and will remain unchanged for term.
- * Depreciable assets = 85% of price, 25 yr. life. 125% SL/DB will be used.
- * No major capital replacements will be incurred during ownership term.
- * Resale price 10 years later = \$3,662,000, cash-to-sellers.
- * Owners will remain in 50% Fed. and 5.75% state income tax bracket for 10 year term.
- * Owners want 18% equity yield - IRR - after income taxes.
- * 1978 Revenue Act governs income, gain and add-on taxes.

Variable factor: mortgage financing:

First mortgage	\$1,479,786 assumed @7½%, 17 more yrs.	New, \$1,850,000 @ 13%, 30-year amort. ballooning 10 years	None
Second mortgage	\$1,500,000 DPMM @ 6%, int.only, 10 yr.	None	None
<u>PRICE (VALUE):</u>	\$3,537,073	\$2,527,098	\$1,435,046
Equity cash:	557,287	677,098	1,435,046

(continued on next page)

- 11 -

	1	\$ 85,460	\$ 88,738	\$ 189,003
	2	86,244	92,103	193,988
After-	3	87,085	95,555	199,054
Tax	4	87,960	99,081	204,196
Cash	5	88,849	102,664	209,411
Flow	6	89,730	106,289	214,695
in	7	93,655	112,136	221,293
Year	8	97,373	117,879	227,890
	9	100,867	123,503	234,488
	10	912,938	1,297,106	2,905,060
	O.A.R.:	.0869	.1264	.2318

Overall Rate = Year 1 Net Income After R.E. Taxes ÷ Total Sale Price(Value)

The enormous differences in the overall cap rates shown in this exhibit, as attributable to the single independent variable, mortgage financing, should not surprise anyone who has studied the effects of seller-financed resales of existing, operating investment properties since 1969 when long term mortgage interest rates first rose to new levels never previously seen since the inception of the level payment mortgage in 1934. The sensitivity of the OAR to this single factor is the strongest and almost irrefutable suggestion that the capitalization rate, if not selected from the widest available data base, computed with the most objectivity, and predicated upon a forecast sale in which the property seller receives all cash at settlement, will surely produce an erroneous value for taxation, eminent domain and mortgage lending. Not included in this discussion is the valuation of properties for specific purchasers under terms incompatible with the definitions and normal interpretation of "market value".

Exhibit One does not account for the newest practices of mortgage lenders in curtailing the rapid loss in yields they would otherwise suffer, by sharing some of the pretax cash flow and/or equity reversion upon resale, with the mortgagor. That subject is irrelevant to the illustration made - that the OAR is more sensitive to mortgage leverage than any other factor except the forecast Year One NOI.

In the application of the OAR, most often termed "direct capitalization" because the rate encompasses all independent variables without quantifying any of them, James W. Martin said:

"I think that quite generally, all people who have worked on the finding of the rate or a number of rates of capitalization have defined the problem of using information from the marketplace to maximum advantage; yet when it comes to the actual choices that are made, the choices seem to be influenced more by the observers' judgment about what ought to be done than what the marketplace actually says about it. Now I think personally that this is a grave error and it needs correction." ¹¹

David J. Morrison in referring to the straight line capitalization with building residual technique, stated:

"This capitalization method has several obvious shortcomings, including the inherent assumption that the *improvements will depreciate on a straight line basis at a rate equal to the recapture rate*. A more appropriate name for the straight line method with the building residual technique might be 'fun and games with numbers' since it is widely used to mathematically justify a predetermined valuation figure." ¹²

Kauffman wrote:

"It appears . . . that appraisers have discovered the delights of composing overall capitalization rates without the benefit of the market . . . It is conceivable that OAR or 'R' is a sterile rate revealing a relationship useful in comparison of similar properties." ¹³

Ratcliff criticized the conventional income approach in saying:

"The appraiser cannot extract from the usual information available on comparable sales the capitalization rate actually used by either of the parties to the transaction in his own investment calculus. There are so many variables which enter into price establishment that it is logically and mathematically impossible to extract any one of them, such as the capitalization rate, without knowing all the others." ¹⁴

Maisel and Roulac wrote:

"We have criticized the techniques of profitability measurement (broker's cash-on-cash and appraiser's overall capitalization rate) because they do not furnish the investor with a measure of profitability that is accurate enough to be used in investment analysis and actual investment decisions." ¹⁵

Lloyd Hanford, Jr., stated:

"Historically, the most popular method was to extract the capitalization rate from observed market transactions . . . If we have a large number of recent sales with reliable raw data, this method may be appropriate . . . Rarely is a sale sample homogeneous as to all of its elements. In reality, use of raw data (sales price and indicated net income) to produce a capitalization rate comparable produces a rate as 'raw' as the data input . . ." ¹⁶

One of the most recent and comprehensive critiques of the practice of extracting capitalization rates from the market is in an article with that title, by Arthur C. Cohen, in THE APPRAISAL JOURNAL of July, 1979. His conclusion was that:

"The most obvious alternative is the Ellwood Method, in which expectations can be stated, isolated, and subjected to both investment and sensitivity analyses. There is no question that this method is imperfect and subjective; however, it does require the appraiser-analyst to state and justify presumptions rather than camouflage them in so-called 'market' data."

Most of the preceding negative commentary on the use of both direct and indirect capitalization procedures is from staunch proponents of the more sophisticated and reliable after-tax cash flow discounting procedures. Such procedures require the use of computers costing in excess of \$3,000, and of rather sophisticated software. Assessors in many states have only recently availed themselves of large computers, but their most complex software is limited to the powerful, statistical, multiple regression method of valuing non-investment classed properties, primarily single-family residential including condominium apartments. Still, the vast majority of tax assessing officials remain shy of using computers for anything more than data storage and retrieval. The typical assessor-appraiser dislikes the use of any kind of calculator or computer over which he has no control while it is actually performing its many high-speed calculations.

STEPS TOWARD MODERNIZATION

Despite all the criticism of the single rate net income capitalization procedure, it *will* produce far more accurate valuations than the depreciated cost and direct sales comparison methods. But only under the provision that the assessor-appraiser has access to full information regarding net operating figures for both the data sales and the properties to be appraised; and has all detailed information on the mortgage financing involved in the data sales.

The smallest and least expensive of the programmable hand-held calculators will provide for these first three important steps in the modernization of investment property valuation.

Simultaneously, it would help educate and train assessors-appraisers to achieve first level skills in computer-assisted mass appraisal.

Step 1: Analysis of investment property sales data for the conversion of their nominal sales prices to cash equivalent prices, and the determination of their OARs based upon their cash equivalent values and their actual or anticipated first year NOIs.

Step 2: By simple linear regression, correlate the relationship of the observed OARs and the equity cash amounts invested, for the data sales in a homogeneous group by type of property and economic environment.

Step 3: Valuation of each taxable property in the most objective possible manner utilizing currently available new first mortgage information, forecast net operating income *before real estate taxes* for the tax year, and the effective real estate tax rate applicable at 100% of market value.

STEP ONE - DATA ANALYSIS

There is no need to describe herein the rather simple net present value method of calculating the cash-equivalent value of a datum property sale price. The 1978 I.A.A.O. text, *IMPROVING REAL PROPERTY ASSESSMENT*, contains both discussion and mathematical examples of the discounting of below-economic-interest-rate mortgages to their cash liquidable values. The California State Board of Equalization considered the topic so important that in 1976 it published a special handbook, *CASH EQUIVALENT ANALYSIS*, which contains 12 different drill problems in converting nominal sales prices to their cash equivalents. The handbook emphasizes: "That sales adjusted to a cash equivalent are merely value indicators and do not necessarily represent market value." The handbook also adds:

"In modern societies, it is the practice and a great convenience to express values in terms of money. Money performs several functions, one of which is to measure value. Therefore, from a logical and practical viewpoint, it is proper to measure market value in terms of money. In the field of valuation for property tax purposes, values should be expressed in terms of the same thing for all the different kinds of property. If not, the equity of the tax is destroyed or at least greatly impaired . . . A professional appraiser, therefore, cannot simply accept sales prices without an analysis of the cash equivalency of the non-monetary components of the consideration. In the distant past, sales were analyzed on the basis of what the buyer paid. Beginning in the 1930's, loan ratios became higher and cash downpayments were reduced to a minimum. Consequently, the emphasis shifted from what the buyer paid to what the seller received, and many contemporary authorities support this concept."

Both the I.A.A.O. and California educational documents cited above make reference to the use of printed tables of compound interest factors in solving net present value problems. But time changes many things, often very quickly. It is now faster and more error-free to use the modern hand-held business calculators made by Hewlett-Packard and Texas Instruments, with their hardwired programs for n , i , PV , NPV , PMT , FV and IRR . Printed compound interest tables are doomed, certainly, to the same fate as the trusty old engineer's slide rule.

Numerous authorities, including assessment officials, have for more than a decade expressed the importance of analyzing market sales for their cash equivalencies. Some of these authorities are cited in the bibliography in this article. ¹⁷ While some have not specifically claimed that market value equates to cash-to-seller value, all have so implied this relationship, as have a few state courts and still more Federal courts, particularly in the context of just compensation under eminent domain. Without any desire to add to the complete inter-

pretation of Market Value printed in the current and last previous editions of the A.I.R.E.A.-S.R.E.A. REAL ESTATE APPRAISAL TERMINOLOGY, it is logical to say that taxable value is cash value if cash value represents just compensation for owners suffering condemnation.

Cash equivalent analysis cannot be conducted on the basis of guesswork. In all probability, some of the impetus for the retention of the depreciated cost approach as the primary valuation tool is that it is often the only one found upon opening the toolbox. Among the 39 replies received from the previously referenced questionnaires sent to all state taxation and revenue departments:

Only 9 states reported that their assessing officials have access to information on the principal amounts of mortgage financing, but then only 3 states acknowledge they have information on the interest rates and terms of such mortgages.

Thirty-six states indicated they have no legal requirement compelling the annual disclosure by taxpayers of their mortgage indebtedness and mortgage terms, although one state can legally require such submission upon request, and 8 states ask for the disclosures on a voluntary basis.

Five states reported "yes" and 31 "no" as to whether their tax code mandates, or their highest court has decided that taxable value shall be the price at which the seller receives all cash for his equity interest.

Three states replied "yes" and 30 "no" to the question as to whether taxable value is the price at which *both* the seller and the holders of below-market rate mortgage notes would receive all cash for their equity positions.

Two states indicated their assessors are reducing nominal sales prices to cash equivalent values, and in a third state they are "sometimes" doing this. One state reported that cash equivalent conversion has not been allowed; another that its definition of market value is very loose, and "cash" is loosely translated.

It is very disappointing to the student of valuation to learn, and equally illogical on the part of local government, that such government compels one portion of its assessment staff to work blindfolded in the valuation of investment properties while other portions have ready access to *all* the factors which create value in non-investment properties such as single family residential, institutional and special purpose.

When Ramapo Township, Rockland County, New York, agreed to initiate the application of that state's multiple regression valuation program nearly a decade ago, it examined and "listed" far more than a sufficient number of characteristics of all of its 22,000 taxable parcels. These were, of course, the physical characteristics. Size, shape, quantity, composition and observed condition. Ramapo has very few properties in the classification of marketable investment. Through this single appraisal procedure, initially accomplished through batch-service punch cards mailed to computer operators in Albany, Ramapo rapidly and greatly reduced both the number of errors in its assessments and the number of protests and appeals from its taxpayers. But the appraisal method was not one of income capitalization.

Lawrence P. Layne, in discussing multi-family residential and tenant-occupied commercial and industrial property, stated that:

"The market value is based solely on the capitalized income stream, and the capitalization rate is influenced by the security of this income flow . . . A sales-assessment ratio analysis for these classes of real property is virtually useless because of the limited number of transactions in a given economic neighborhood, and the *non-comparability of economic factors peculiar to each sale*. In order to bring his assessments in line with the current market value in a dynamic economy, the assessor needs specific tax information on each category of income producing property. He must also have the statutory authority to enforce the full

- 15 -

disclosure required by the reporting form. He must have full time personnel capable of using the income approach to value, *including the ability to analyze mortgage conditions* which may be an encumbrance on the market value". [Emphasis added] ¹⁸

After determining the cash equivalent value of a datum sale property (not that it would have been the price if sold on cash terms, but far more realistic than the nominal price) the OAR must be calculated. $OAR = I/V$. But income is not what the property produced in the year immediately preceding the date of sale, or more nebulously what it was producing at the moment of sale. It is what the property is expected to produce in the year immediately following the date, disregarding some other number which in recent years has been popularized as the "equivalent annual annuity" of a future series of increasing or decreasing incomes. This alternative number, no matter how pragmatic, does not influence the mortgage lender and is not needed for a high degree of improvement in valuation by appraisers and assessors. Yet, in the referenced survey of the 50 states, 16 replied that the NOI used in computing the OAR is that prior to the date of sale, while only 5 states reported that the NOI utilized is for the year following.

There should be no dispute as to which NOI is used in valuation of a subject property - it is that which is *forecast* by the purchaser, thus the appraiser, for the first year after title is taken. A prudent purchaser simply does not give part of his future profits to the seller. If income is anticipated to rise in the future, the benefits therefrom will accrue to the new owner, not to the seller who has passed title and the burdens of risk, management and non-liquidity! There are exceptions to this rule, of course, such as a commercial property in which uneconomic leases will soon terminate and can be replaced at much higher rents.

And finally there is the mortgage lender who has abandoned the "75%" or "80%"-of-value criteria (which is not in any event feasible when interest rates are around 12% and higher) and now carefully determines the amount available for a new loan by dividing the forecast Year One NOI by both the debt service constant and the debt service coverage ratio applicable to the kind of property to be mortgaged.

Simple logic and tax equalization compel the assessor to compare apples with apples. If in the valuation of a taxable property by income capitalization, the assessor capitalizes immediate future income (which most do, although this question was not carefully isolated in the author's survey), then the OARs from the data sales must be extracted under the same procedure, using the forecast Year One NOI for each comparable.

STEP TWO - BASIC CORRELATION OF DATA BASE

Fundamental to all monetary investment phenomena, "them as has, gets". This expression will not be found in either the APPRAISAL TERMINOLOGY or the DICTIONARY OF QUOTATIONS. It merely explains that those with the most, get the most. Buyers of \$100,000 savings certificates earn higher yields than passbook savers. This author has to pay 3¢ more postage to mail his check for a bill from his department store than the store pays to mail the bill, although both mailings are first class. The store is a larger customer and gets a discount for pre-sorted mailings in large quantities. Still larger customers of the U.S.P.S. - the junk mailers - receive larger cash discounts.

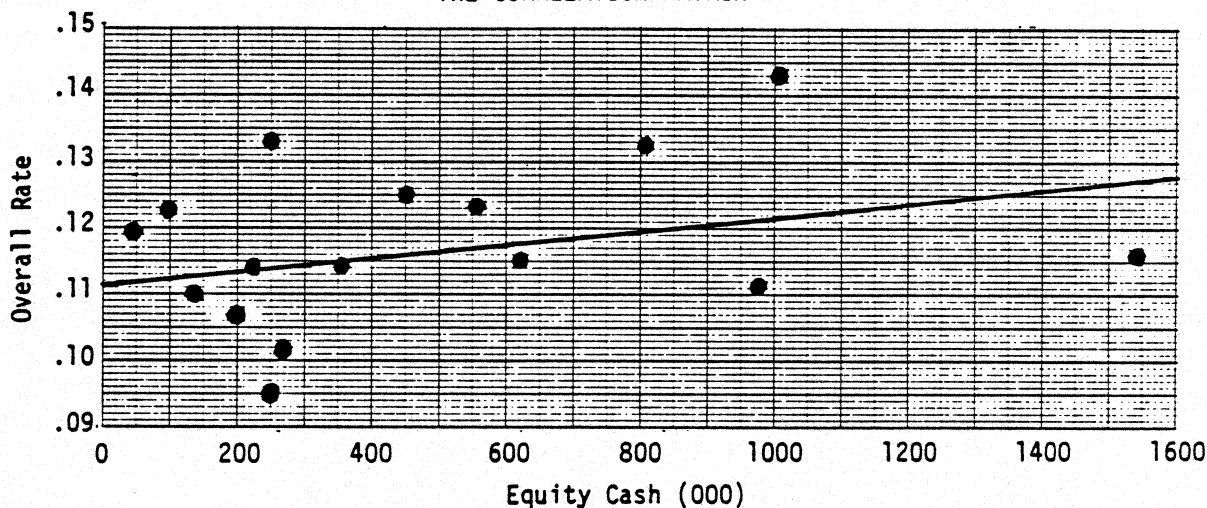
For eleven years, ending 1979 when this writer became more interested in studying the present use of older valuation methods, he diligently analyzed some 90 investment property sales in the D.C. region for their indicated *after-tax* equity yields to their new owners. ¹⁹ It was found that for all those years the mean average yield for the lowest price properties was about 9%, and for the highest priced about 11%, all analyses being made on the constant dollar basis. Subsequently, Gibbons has explained that even if one had no such after-tax equity

- 16 -

yield market data, a reasonable yield can be postulated by reference to both pre-tax and after-tax yields in the several alternative investment media, many of which are shown daily in financial newspapers. 2

The greater the equity cash invested, the greater the yield. This also means in nearly every instance the greater the OAR. Exhibit Two displays the correlation between equity cash and OAR for some 16 multifamily apartment property sales in the Northern Virginia region, selected for their relative homogeneity in location (the social factor), price and dates of sale (the economic factors), and freedom from rent control (the political factor). None of these 16 properties was sold for immediate conversion to condominium (an entrepreneurial factor) or for near future demolition and redevelopment of its land component.

Exhibit 2
THE CORRELATION MATRIX



Admittedly, the coefficient of correlation, 31% in this linear regression, is not high by statisticians' standards. Nor would it likely ever be, since the investment real estate market is probably the second most imperfect, behind the automotive industry, in the world of capital budgeting and finance.

A separate correlation matrix for the ad valorem tax appraiser would be required for each kind of investment property in each geographic area of similar social, economic and political influences. A matrix for modern apartment buildings and one for older buildings; one for large office and one for small office buildings; one for hotels; one for retail centers; and one or more for general purpose warehousing and R & D type industrial properties.

From thirteen years of experience in analyzing pre-tax and after-tax equity yields - and more recently OARs - this writer finds no question that OARs vary with types and ages of property, as well as with amounts of equity cash infusions. Once the correlation matrix (the market data base) has been prepared (and placed upon graph paper, an essential step for the beginner in computer applications), the operator is ready for his next use of the hand-held calculator. This is the linear regression routine in which the pair of numbers for each datum sale, equity cash (x) and then OAR (y) for the Texas Instrument, or the reverse order for the Hewlett-Packard, is put into the machine. After all pairs of data are entered, more RUN commands are input whereupon the machine calculates the correlation coefficient, then the slope of the regression line, and finally the value of the OAR (y-intercept) at equity (x) value of zero. To draw the regression line on his graph paper, the operator needs a second point of reference. He selects the highest equity value on his graph (ie, 1,600,000 in Exhibit Two), enters that

figure, and another RUN key command will produce the additional value of the OAR (y) at the right edge of the graph.

Since the OARs for all of the data sales were those calculated upon net income after real estate taxes, the calculator is not yet ready to value any of the taxable properties. Most, but not all, tax assessors recognize the impossibility of arriving at a correct value if they attempt to capitalize the net income by first guessing at the dollar amount of the RE taxes and deducting that amount along with the other operating expenses. This would only add another error to the valuation. The RE tax rate, at 100% of market value, is and must be an additive to the market-derived cap rate. Net income must be that which the property is forecast to produce before RE taxes.

The same logic would apply to treatment of income taxes in DCF valuations using after-tax cash flow. Hear what Ronald Welch stated in this regard:

"The value of the property has to be related to the net income after income taxes. In the case of bonded indebtedness since the interest is deductible, you automatically get an after-tax net income out of it, the tax being zero. In the case of equity capital, despite the contention of some of the California county assessors, and I am sure local assessors in other states, you do have to reckon with the fact that the earnings that go to the equity investor or are withheld as undistributed profits are subject to corporation income taxes, usually at both the state and federal levels. These taxes have to be reckoned with, either by deducting them before calculating the net income to be capitalized or by including an income tax component in the capitalization rate. In California, we have chosen to go the latter route - that is, we have included a component for income taxes in the rate of capitalization applied to the income before deducting the income tax. I should point out that there are some problems associated with this approach. Nevertheless, I prefer it over the alternative method of deducting income tax as an expense. But in both instances we are, in effect, removing the income tax consequences before we arrive at the rate that we use in capitalizing net income." 2

Before making any of the property valuations, the calculator must next be given the effective RE tax rate, which it adds to the OAR (y-intercept) at zero equity. It retains the same slope as before, and except for the mortgage information the 8-ounce electronic marvel is now ready for appraisal service.

STEP THREE - PROPERTY VALUATIONS

If taxable value is synonymous with cash value, and if this means that the seller receives all cash at settlement irrespective of the open money market mortgage(s) the purchaser chooses to obtain, the appraiser must next calculate as closely as possible, dictated by the current rates of interest and amortization terms for new first mortgages on the kinds of properties to be appraised, the ratio of mortgage loan to total property price. This ratio might now be 70%, 60%, or smaller.

As earlier said, mortgage lenders have abandoned their (sometimes statutorily limited) loan-to-value ratio criteria. Except when they act as co-owners of, or participants in the cash flow from investment properties, they now carefully determine the amount of a new loan by dividing the forecast NOI (after deducting RE taxes) by both the debt service constant and their preferred debt service coverage ratio for the kind of property to be mortgaged. By example, loan amount = $\$128,000 / (.1517)(1.27) = \$664,000$. Here, .1517 is the constant for a 15 %, 30 year term loan, and 1.27 might be the lender's coverage ratio for a modern, well located apartment property. Current ratios for various kinds of properties are helpfully listed in the quarterly *Investment Bulletin* of the A.C.L.I. 2, but are just as accurately, and probably more conveniently ascertained by a local telephone call to a friendly mortgage banker or correspondent.

- 18 -

An approximate value of the property with an exemplified NOI of \$128,000, using an OAR of .1175 (or whatever OAR the data matrix may indicate) would be \$1,089,000, indicating a loan-to-value ratio of 61%. Additional preliminary calculations might show an average ratio of 60% for the group of properties to be appraised. Thus, the calculator input would be simply .6, followed by another RUN command.

The last data input is the forecast NOI before RE taxes for the tax assessment year. Following this input, one of the two calculators this writer has tested, and for which the operating instructions (Exhibit Three) and program (Exhibit Four) are included, will solve for and display the property value in from 10 to 30 seconds of time. The second of the two machines just as thoroughly tested requires nearly twice the calculating time but offers the advantage of being programmed from a magnetic card rather than from its keyboard, for each day's use.

Exhibit 3

HP38C PROGRAM DESCRIPTION AND INSTRUCTIONS

Preamble: Analyze all sales in group of comparable properties. Using mortgage and discounting programs in the calculator, compute cash equivalent prices for each property. Record cash equity invested in each. Compute and record OAR based on cash value and actual or budgeted Year One NOI.

Program contains two main subroutines: (A) computes linear regression for OAR (y) and equity cash (x) and displays y and x values at two different points for plotting LR on graph paper; (B) computes value of any subject property based upon,

1. Given loan-to-value ratio
2. Real estate tax rate for assessment year, at 100% of market value.
3. NOI before real estate taxes, forecast for assessment year.

Key program into machine, go to Step 00, depress R/S

Data Entries:

- * Enter OAR (e.g., .1145), depress R/S
- * Enter equity cash (e.g., 370,000 - use all figures), depress R/S
- * Repeat above two steps for all sales data. After last pair of entries, depress R/S again. Correlation coefficient is displayed for information of operator -
- * Depress R/S again. OAR for zero equity is displayed for plotting on graph paper.
- * Depress R/S again. First significant digit of slope is displayed.
- * Enter highest \$ equity needed for plotting right end of LR line, depress R/S. OAR at higher equity value is displayed for plotting on graph paper
- * Enter RE tax rate (e.g., .0183), depress R/S. OAR including RE tax rate at zero equity is displayed. Y-intercept has been changed, but slope of LR remains the same.
- * Enter loan-to-value ratio (e.g., .64), depress R/S
- * Enter NOI before RE taxes for subject property, depress R/S and allow from 10 to 30 seconds for final property value to be displayed.
- * Depress R/S again to ready machine for next property valuation at same loan/value ratio.
- * For a new loan/value ratio, go to Step 33, depress R/S, enter ratio, depress R/S again, and machine will go to Step 39 for NOI data entry.
- * For a new set of data base entries, go to Step 00, depress R/S, and machine will clear all previous base data, ready for pairs of OAR and Equity cash entries.

Accuracy of Computations: .0001999999 or smaller portion of exact OAR based upon regression correlation of data used.

Notice: In the 98-line Program shown in Exhibit Four, the use of four of the five compound interest keys in the top row of the keyboard is for data storage only. Ten data storage registers are required for this program, necessitating the use of these four keys in a manner different from that described in the Owner's Handbook.

The overall rate capitalization procedure was adopted by hundreds or thousands of practicing appraisers and assessors early in the 1960's and was considered a "sophisticated" procedure because the rate did, in fact, incorporate every element of value taken into account by purchasers of investment properties. In the early and mid-60's, long term mortgage interest rates were extremely stable, mortgage money was plentiful (inflation had not begun to destroy mortgage yields), and the OARs for modern, highly functional properties were not much above the basic interest rates of the mortgage loans. At nearly every resale of an investment property, or just prior to the resale, the property was refinanced to the maximum amount available. OARs were very narrowly grouped for each kind and location of properties.

Even then, it was obvious that the cap rates for the most expensive properties were slightly greater than for the least expensive. Following 1969, when mortgage money rates had risen to new levels, there was a noticeably wider range in OARs extracted from market sales. The OARs for newly financed or refinanced properties were much higher than found in resales of properties purchased subject to existing mortgages. And when a sale was made subject to an older loan and new, secondary financing by the seller, the observed range of OARs became even wider. This effectively ended the period of tranquility in which appraisers could utilize casually-derived OARs and the direct capitalization procedures. Most appraisers were prompted to learn, for the first time, or fall back upon the Ellwood mortgage-equity formulae which continued to gain popularity through the early 1970's. A few turned, instead, to the after-tax-cash-flow DCF procedures using some of the original time-share computer programs which had by then been written for real estate investment analysis. In the computerized systems, all the seven main factors of value (p. 10, *supra*) could be easily incorporated, and most of these factors could be readily and accurately ascertained without the time-consuming market research and accumulation of "raw data" from public records and other sources.

Tax assessors and most independent fee appraisers, however, were not permitted this ease of transition from direct capitalization with its unacceptably wide range of market indicated OARs to the more sophisticated after-tax DCF procedure. They did not have access to computers in most jurisdictions, nor were they trained in the fundamentals of DCF either before or after income taxes.

But, it is NOT here suggested that for the *first three steps* toward modernization in appraisal of investment properties appraisers and assessors need pay attention to the full array of factors dictating market prices. All factors are reflected in the data base matrix previously described and exemplified, and with sufficient accuracy - if they are employed as recommended here - to reduce the dispersions in tax assessments to the level where, like in the Ramapo story, assessment appeals would be minimized or almost entirely eliminated. NOI, OARs extracted from sales prices reduced to their cash values, and the mortgage loan ratios are the three factors which will promote a most creditable advancement in tax valuation.

A MINIATURE NOI/OAR
COMPUTER PROGRAM

The HP38C and the TI59 hand-held or desk-top calculators are suggested for modernizing and improving the accuracy of investment property valuations. The very smallness of these calculators should overcome the reticence of assessors-appraisers in moving toward "computer assisted mass appraisal", as it is often and appropriately described.

The program for only one of these two calculators is provided in this article, as Exhibit Four. This is for the HP38C, the least expensive of the two. Owners and prospective users of the TI59 may obtain a copy of the same program in the form of a magnetic card, together with operating instructions, by writing this author.

Program Coding for HP38C

STEP	CODE	REMARKS	STEP	CODE	REMARKS
00	g P/R		50	÷	= Trial Value (V_1)
01	f 4		51	RCL 3	Value/Equity Ratio
02	f Σ		52	÷	= Equity (E_1)
03	CLX		53	STO 5	
04	R/S	ENTER OAR (.XXXX)	54	RCL 1	Slope (OAR/E)
05	g x=0		55	X	= Increment for OAR ₂
06	g GTO 10		56	RCL PV	OAR @ E = 0
07	R/S	ENTER EQUITY (NNNNNN)	57	+	= OAR ₂
08	f Σ+		58	f 1/x	
09	g GTO 03		59	RCL 1	NOI
10	g \hat{y}, r		60	X	= Trial Value (V_2)
11	x \hat{z} y		61	RCL 3	V/E Ratio
12	R/S	Read Correlation	62	÷	= Equity (E_2)
13	0		63	STO 6	When $E_1 < E_2$ Final Value
14	g \hat{y}, r		64	RCL 5	is bracketed; go to
15	STO n	Store OAR	65	g x≤y	fine tune OAR increment
16	R/S	Read OAR E = 0	66	g GTO 70	
17	0	For Graphing	67	RCL PMT	OAR increment
18	g \hat{x}, r		68	STO +2	Increment Base OAR
19	CHS		69	g GTO 48	to repeat routine
20	RCL n		70	1	When fine tune
21	x \hat{z} y		71	RCL 4	OAR routine is
22	÷		72	-	complete go to
23	STO 1	Read Slope and	73	g x=0	final Value routine
24	R/S	ENTER HIGH EQUITY	74	g GTO 86	
25	X	For Graphing	75	RCL PMT	OAR Increment
26	RCL n		76	STO -2	Reset Base OAR to Value in
27	+	Read High OAR and	77	.	preceding iteration
28	R/S	ENTER TAX RATE (.RRRR)	78	0	Fine
29	RCL n		79	0	tune OAR
30	+		80	0	factor
31	STO 2	Read OAR + Tax	81	4	
32	STO PV	At E = 0	82	STO PMT	Store finer increment
33	R/S	ENTER LOAN/VALUE RATIO (.NN)	83	1	
34	CHS		84	STO 4	Increment Counter
35	1		85	g GTO 48	
36	+	= Equity/Value Ratio	86	RCL PV	Reset OAR, at E = 0
37	f 1/x	= Value/Equity Ratio	87	STO 2	for next property valuation
38	STO 3		88	RCL 5	E_1
39	R/S	ENTER PRE-TAX NOI	89	RCL 6	E_2
40	STO 1	Store NOI	90	+	= $E_1 + E_2$
41	.		91	2	
42	0	Set first increment	92	÷	= ($E_1 + E_2$)/2
43	0	for changing OAR	93	RCL 3	V/E Ratio
44	4	for trial values	94	X	= final value
45	STO PMT	Store increment	95	f 0	Set decimal point to zero
46	0	Set counter for	96	R/S	Read Final Value
47	STO 4	first level routine	97	CLX	
48	RCL 1	NOI	98	g GTO 39	for next NOI & valuation
49	RCL 2	OAR			

- 21 -

The assessor-appraiser, upon reading the Owner's Handbook and Programming Guide, should quickly comprehend this computer program. The final valuation routine begins with a trial value at the lowest OAR indicated by the comparable market data - at zero equity. For each successive trial value the OAR is increased by .004 until the machine finds that it has bracketed the exact value by its last two trial runs. This occurs when the correct equity amount has been bracketed. The machine then backs up to the lower of the last two OARs used and begins increasing the OAR by .0004 until the correct value is again bracketed. At this point, the machine sums the last two equity amounts used, splits the difference in half, and displays the property value found within the accuracy specified.

The same operation can be performed on the TI59, costing about \$100 more than the HP38C at the time of this writing; or, a still longer program with more arithmetic (but not market valuation) precision can be written for the TI due to its larger capacity. The advantage of the TI59 (as with all more expensive calculators from HP and TI) is that it can be programmed and made ready for use in a few seconds, with the magnetically programmed card. Still larger computers, of course, are programmed by magnetic tapes and discs.

CONCLUSIONS

The "constructive market value" suggested by Jensen has never been sanctioned for taxation of marketable investment properties. Market Value prevails in all jurisdictions, placing the duty upon the assessor to understand investment market phenomena and to duplicate its pricing behavior as accurately as is permitted by the constraints of rapid, mass appraisal procedures.

The judiciary and the owners of "highly improved properties", contrary to Zangerle's prediction, have not denied sole dependency upon the income approach. Today's owners dislike any other method, and complain only when their assessed values exceed the prices these taxpayers, better than all else, know their properties would sell for upon cash-to-seller terms. Courts are increasingly recognizing the preeminence of income capitalization, and occasionally take pleasure in calculating a capitalization rate when not satisfied with the experts' rates.

Professional and academic criticism of the *direct capitalization* process, since 1969 when OARs were seen to be dispersed in all directions, arose mainly because it has been incompetently handled. It became useless, indeed, but only for the reason that *market data* were not properly analyzed. The futility of valuation in the no-market era of the 1920's was no worse than the unprofessional practice, in the 1970's, of collecting masses of raw data, misinterpreting them, and *subjectively* selecting cap rates which satisfied clients and politicians.

It is far past the time when the depreciated replacement cost approach should have been discarded for investment property (although cost is a most essential factor in economic feasibility analyses of proposed new investments, especially when using sophisticated computer programs and after-tax cash flow). Some appraisers and assessors have turned, therefore, to simple and crude applications of the "sales comparison" approach; but this has all the same defects as does the NOI/OAR method if the data sales are not completely analyzed for the two main pricing factors: NOI and mortgage financing.

Tax assessors require much more than the assistance of computers. Why, in the instance of an investment property taxpayer, should not the assessor be given the same income tax data annually submitted to the federal and state treasurers? Surely, the ad valorem tax administrators cannot be held in such low esteem that they are believed untrustworthy of utilizing this most essential information. *"Dr. Cuttem, you may be an expert in laser surgery, but in this case we prefer that you disinfect the best blade of your pocket knife and do your operation so we can all watch it and understand it."*

The NOI/OAR computer assisted method shown here, depending upon the success of assessors-appraisers in analyzing their market data, should provide much improvement in valuation accuracy, and it is well suited to mass appraisal procedures. It can be assimilated by assessing officers in shorter time than can the replacement cost and depreciation calculations, and it would serve to move assessors, who are already familiar with the power of the larger computers in data storage and retrieval, toward the use of the machine as a *computational tool*.

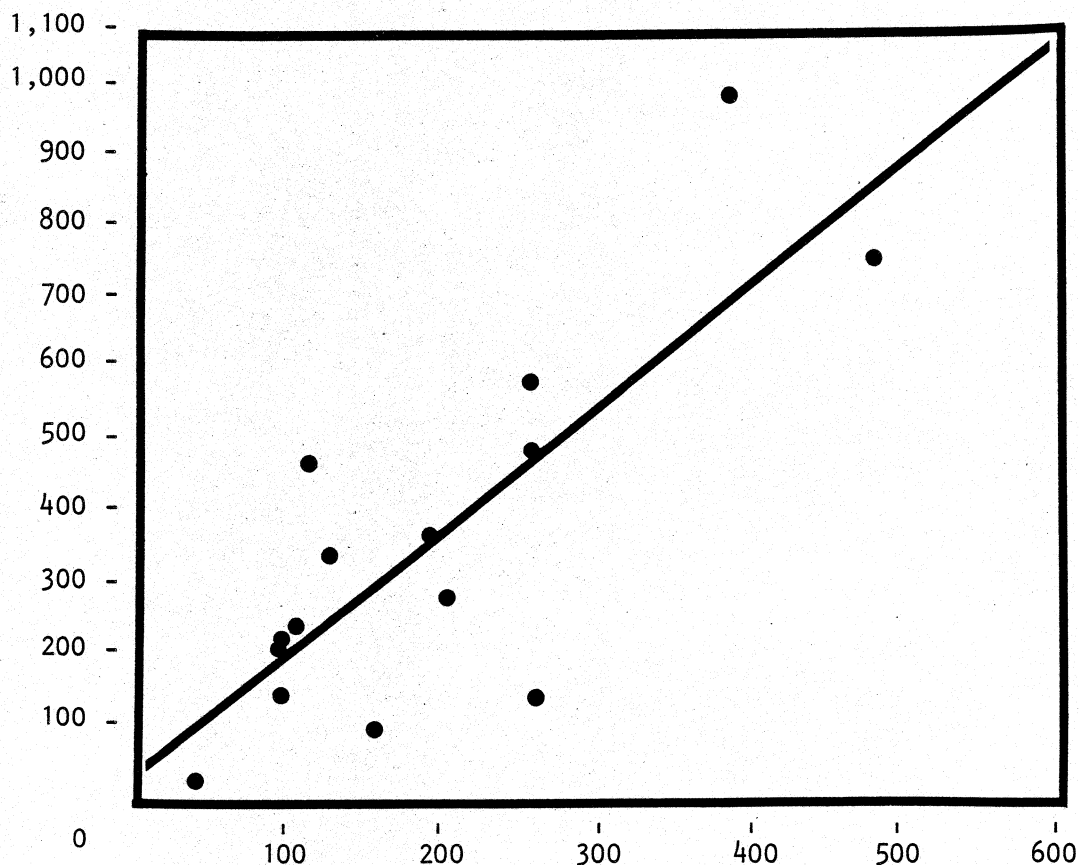
REFERENCES

1. Richard M. Hurd, PRINCIPLES OF CITY LAND VALUES, The Record and Guide, New York, 1924.
2. THE APPRAISAL OF REAL ESTATE, Macmillan Co., New York, 1927, p. 122 & 123.
3. Report of the Sub-Committee on Standards of Practice and Code of Ethics, of the Executive Committee, Appraisal Division, National Association of Real Estate Boards.
4. PROPERTY TAXATION IN THE UNITED STATES, University of Chicago Press, 1931, pp. 429, 448, 449, 450,
5. "Taxing Real Estate on Its Income", Chapter XIV, 1939 Symposium, Tax Policy League, Inc.
6. PROPERTY TAXATION: THE NEED FOR REFORM, Ballinger Publ. Co., 1978, p. 31.
7. THE ART OF VALUATION, edited by Arlo Woolery, Lexington Books, D. C. Heath & Co., 1978, p. 11.
8. FINANCING STATE AND LOCAL GOVERNMENTS, 3rd Ed., James A. Maxwell and J. Richard Aronson, The Brookings Institute, 1977, p. 145.
9. THE POLITICS OF THE PROPERTY TAX, Diane B. Paul, Lexington Books, D. C. Heath & Co., 1975, p. 26,
10. Ibid, p. 36.
11. Ibid, p. 17
12. "Cash Flow Valuation and Yield Valuation", THE APPRAISAL JOURNAL, January, 1972.
13. "Mortgage Equity: Abuse and Misuse", THE REAL ESTATE APPRAISER, Jan-Fed., 1975.
14. VALUATION FOR REAL ESTATE DECISIONS, Democrat Press, 1972, pp. 246, 247.
15. REAL ESTATE INVESTMENT AND FINANCE, McGraw-Hill, 1976, p. 348.
16. "The Capitalization Process Revisited", THE APPRAISAL JOURNAL, July, 1976.
17. Ken Garcia, "Sales Prices and Cash Equivalents", THE APPRAISAL JOURNAL, Jan., 1972; Paul F. Wendt, REAL ESTATE APPRAISAL REVIEW AND OUTLOOK, U. of Georgia Press, 1974, p. 97; Paul E. Klein, THE JOURNAL OF REAL ESTATE TAXATION, Winter, 1975, pp. 213, 214; Albert J. Lowry, HOW YOU CAN BECOME FINANCIALLY INDEPENDENT BY INVESTING IN REAL ESTATE, Simon and Schuster, 1977, p. 299; Arthur C. Cohen, "Extracting Cap Rates 'From the Market': Beware!", THE APPRAISAL JOURNAL, July, 1979; Joseph B. Lipscomb, "Discount Rates for Cash Equivalent Analysis", THE APPRAISAL JOURNAL, January, 1981.
18. "Market Value Assessments in a Dynamic Economy", PROPERTY TAX REFORM, THE ROLE OF THE PROPERTY TAX IN THE NATION'S REVENUE SYSTEM, I.A.A.O., July, 1973.
19. The author first discussed after-tax-equity-yield research in "Ellwood Plus, or Equity Yield After Taxes", THE REAL ESTATE APPRAISER, Sept-Oct., 1969; again in "Computer Progress in Valuation of Income Properties", THE APPRAISAL JOURNAL, Jan, 1971. See also Chapter 5, "The Great ROI Debate", MODERN REAL ESTATE INVESTMENT by Roulac, Property Press, 1976.
20. James E. Gibbons, "Equity Yield", THE APPRAISAL JOURNAL, Jan., 1980.
21. Ronald W. Welch, THE ART OF VALUATION, Ibid, p. 41.
22. American Council of Life Insurance, 1850 K Street, N. W., Washington, D. C., 20006.

EXHIBIT D

A PLOT OF DOWN PAYMENT
TO PROJECTED NET INCOME

Cash Down
(In thousands
of dollars)



Projected Net Income
(In thousands of dollars)

Equation is Downpayment (\$) = \$40,284 + (1.63) (Net Income)
Correlation = .89
 r^2 = .80
Fifteen cases

J A M E S A . G R A A S K A M P

PROFESSIONAL DESIGNATIONS

SREA, Senior Real Estate Analyst, Society of Real Estate Appraisers

CRE, Counselor of Real Estate, American Society of Real Estate
Counselors

CPCU, Certified Property Casualty Underwriter, College of Property
Underwriters

EDUCATION

Ph.D., Urban Land Economics and Risk Management - University of Wisconsin
Master of Business Administration - Marquette University
Bachelor of Arts - Rollins College

ACADEMIC HONORS

Chairman, Department of Real Estate and Urban Land Economics,
School of Business, University of Wisconsin
Urban Land Institute Research Fellow
University of Wisconsin Fellow, Omicron Delta Kappa
Lambda Alpha - Ely Chapter
Beta Gamma Sigma, William Kiekhofer Teaching Award (1966)

PROFESSIONAL EXPERIENCE

Dr. Graaskamp is the President and founder of Landmark Research, Inc., which was established in 1968. He is also co-founder of a general contracting firm, and land development company and a farm investment corporation. He is co-designer and instructor of the EDUCARE teaching program for computer applications in the real estate industry. His work includes substantial and varied consulting and valuation assignments to include investment counseling to insurance companies and banks, court testimony as expert witness, and the market/financial analysis of various projects, both nationally and locally and for private and corporate investors and municipalities.

T I M W A R N E R

PROFESSIONAL DESIGNATIONS

MAI, Member, American Institute of Real Estate Appraisers,
Certificate Number 5645

SREA, Senior Real Estate Analyst, Society of Real Estate Appraisers

EDUCATION

Master of Science - Real Estate Appraisal and Investment Analysis -
University of Wisconsin

Bachelor of Arts - Marquette University - Milwaukee, Wisconsin

PROFESSIONAL EDUCATION

Society of Real Estate Appraisers

Appraising Real Property	Course 101
Appraising Income Producing Property	Course 201
Special Applications of Appraisal Analysis	Course 301
Instructor's Clinic	1975

American Institute of Real Estate Appraisers

Real Estate Appraisal I	Principles
Real Estate Appraisal II	Urban Properties
Real Estate Appraisal VI	Investment Analysis
Real Estate Appraisal VII	Industrial Properties
Real Estate Appraisal VIII	Residential Properties

Contemporary Real Estate Appraisal, University of
Wisconsin, 1977

PROFESSIONAL EXPERIENCE

Mr. Warner is currently associated with Landmark Research, Inc. Previously, he was associated with The Appraisal Company of Houston, Texas, and was the Manager of Appraisal Operations for Mortgage Guaranty Insurance Corporation. His experience includes appraisal, consulting, and market and financial analysis of proposed and existing projects; reuse and conversion studies; lease analysis and structuring; analysis of equity positions for financial institutions; analysis of proposed multiple land use developments for developers, investors, and financial institutions.

J E A N B . D A V I S

EDUCATION

Master of Science - Real Estate Appraisal and Investment Analysis,
University of Wisconsin

Master of Arts - Elementary Education, Stanford University

Bachelor of Arts - Stanford University (with distinctions)

Additional graduate and undergraduate work at Columbia Teachers
College and the University of Wisconsin

PROFESSIONAL EDUCATION

Society of Real Estate Appraisers

Appraising Real Property	Course 101
Principles of Income Property Appraising	Course 201

American Institute of Real Estate Appraisers

Residential Valuation (formerly Course VIII)

Certified as Assessor I, Department of Revenue,
State of Wisconsin

PROFESSIONAL EXPERIENCE

With a significant background in education, practiced in California, Hawaii and Wisconsin, Ms. Davis is currently associated with Landmark Research, Inc. Her experience includes the appraisal and analysis of commercial and residential properties, significant involvement in municipal assessment practices, and market and survey research to determine demand potentials.

Y V O N N E M. S C H E L L

EDUCATION

Currently enrolled in the University of Wisconsin Graduate School
majoring in Real Estate Appraisal and Investment Analysis

Bachelor of Science - Real Estate and Finance, Colorado State
University

PROFESSIONAL AFFILIATION

Colorado Real Estate Broker

PROFESSIONAL EXPERIENCE

Ms. Schell is currently associated with Landmark Research, Inc. Her experience previously includes involvement as a National Bank Trust Examiner and Commercial Examiner with the Comptroller of the Currency and subsequently as a real estate analyst and broker in Colorado with additional appraisal experience in several other states. Her experience includes the appraisal and analysis of commercial and residential income properties, also feasibility and development potential studies including market and financial analysis.

MARTHA G. HEISEL

EDUCATION

Bachelor of Business Administration - Real Estate and Urban Land
Economics major, University of Wisconsin - Madison, Graduated
with Honors

ACADEMIC HONORS

President and member of Crucible, a UW - Madison junior women's
honorary organization, 1972-3

Beta Gamma Sigma, National honorary business society

Phi Kappa Phi, National honorary society

PROFESSIONAL EDUCATION

Society of Real Estate Appraisers

Appraising Real Property Course 101

Marketing Real Estate by Mortgage Equity Analysis: Course I,
University of Wisconsin - Extension

Wisconsin Realtors Association

Wisconsin Realtors Institute, Courses I, II, and III
Awarded GRI "Graduate, Realtors Institute"

PROFESSIONAL EXPERIENCE

Mrs. Heisel is currently associated with Landmark Research, Inc.
Previously, she was associated with Risberg Land Company and Risberg
Recreational Real Estate, Inc., a recreational real estate brokerage
firm, in Hayward, Wisconsin. Prior to that she was employed as a
management trainee and then head of the Investment Services department
at The First Trust Company of Saint Paul, in Saint Paul, Minnesota.

