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OUTLINE OF LECTURE ON
SIMULATION MODEL FOR INVESTMENT PROJECT ANALYSIS OF
INCOME PRODUCING REAL ESTATE

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School of Mortgage Banking

Course III - July 3, 1968

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School of Mortgage Banking, Course III
Northwestern University, July 3, 1968
Mortgage Bankers Association of America

SIMULATION MODEL FOR INVESTMENT PROJECT ANALYSIS
OF INCOME PRODUCING REAL ESTATE

Presented by
Professor James A. Graaskamp
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I

INTRODUCTION

A. Origins

There is an interdependency of real estate marketing objectives, real estate financial planning, and physical features of project design which is seldom thoroughly tested in adequate detail for any rental project. Market, finance, and design considerations are generally not integrated in the conceptual stage of any project; instead each is isolated to advance the viewpoint of a specialist in one or another of these areas. The architect uses market research to justify a preconceived design, the finance man uses the architect to generate as much leverage from a revenue forecast as possible, or the market researcher begins his study with a preconception of an architectural style or a financial package. The appraiser is then asked to serve as economic interpreter of value making decisions already reached by the architect, lawyer, consumer analyst, and mortgage banker.

The simulation model described in this report begins with the basic objective of integrating market data, cost estimates and financial constraints into a single abstract process for progressively testing project assumptions as plans become more detailed in order to achieve a better relationship of land,

improvements, and financing, to profit objectives. The model represents an accumulation of ideas defined in algebra by the author, given a logic system for the computer by Mr. Robert Knitter of the University of Wisconsin Computer Center, and then tested by graduate student problems and field application. (1) The work was financed jointly by Lambda Alpha, the honorary fraternity of land economics, and the University of Wisconsin Bureau of Business Research. At this writing some further refinements are in process to increase the capacity of output formats, to improve mechanics of financing working capital deficits as incurred, to improve the precision of capital gains tax calculations, and to include the option of a "bonus interest" finance plan. It is then anticipated that the program on cards or tape, together with an operating manual, input forms, and sample projects, will be made available at modest cost to anyone wishing to use the model. (2)

B. Objectives

Since alternative design solutions to any investment project or alternative offering prices and financial plans for existing projects will affect investment return, it is necessary to trace out the consequences of each choice. A basic premise of the model is that the criteria of choice will concern cash flow to the investor over time and the present value of these expected cash returns discounted at a yield to equity required by the investor.

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- (1) Graduate students Robert Markwardt and Tom Turk were primarily responsible for testing input forms, computer routines, and output format.
 - (2) The program is written in Fortran IV for an IBM 1410 with 40,000 character memory and utilizes 2 of 5 tape drives. Execution time of a run is 1-5 minutes depending on volume of outputs. While Fortran IV is compatible with many machine systems, our pilot model requires overlays which may involve some reprogramming to fit other hardware systems. A memory capacity of 120,000 characters would eliminate need for overlays.

The discounting process resembles the internal rate of return approach recently outlined by Professor Paul Wendt in the Appraisal Journal but with the addition of variable, after-tax period returns. (3) Development of cash flow for each period is a tedious, extended, and repetitious operation well suited to the computer. With such a financial review available to suggest implications of alternative decisions, the designer can better fit his solutions to the investor calculus while the investor himself will enjoy a more accurate prospective measure of investment yield. The output of this cash flow analysis has been molded:

- (1) To combine into one model a method of testing alternative designs for capital budgets, operating levels, and before and after tax yields over a time sequence.
- (2) To utilize the internal rate of return approach for variable period incomes while providing comparison to traditional and familiar appraisal methods and language.
- (3) To provide input forms which the average informed real estate investor or appraiser could complete ready for keypunching.
- (4) To generalize all formulas including present value calculations in order to adapt to the user choice of time period, project descriptions, and levels of detail while still permitting individualized labeling of descriptive elements of the outputs.
- (5) To anticipate possible expansion of the program in certain elements for special user needs without necessitating complete reconstruction of the program.
- (6) To adapt to relatively small computer installations available in most metropolitan areas at lending institutions or data service companies.
- (7) To provide outputs which summarize and analyze both the inputs and the outputs in forms familiar to the real estate investor and within an 8 1/2 by 11 page to allow insertion within the familiar standard written report form.
- (8) To provide a variety of analytical summaries to serve such users as architects, mortgage lenders, management strategists, marketing analysts and appraisers.

(3) Paul F. Wendt, "Ellwood, Inwood, and the Internal Rate of Return", The Appraisal Journal, October, 1967, page 561-574.

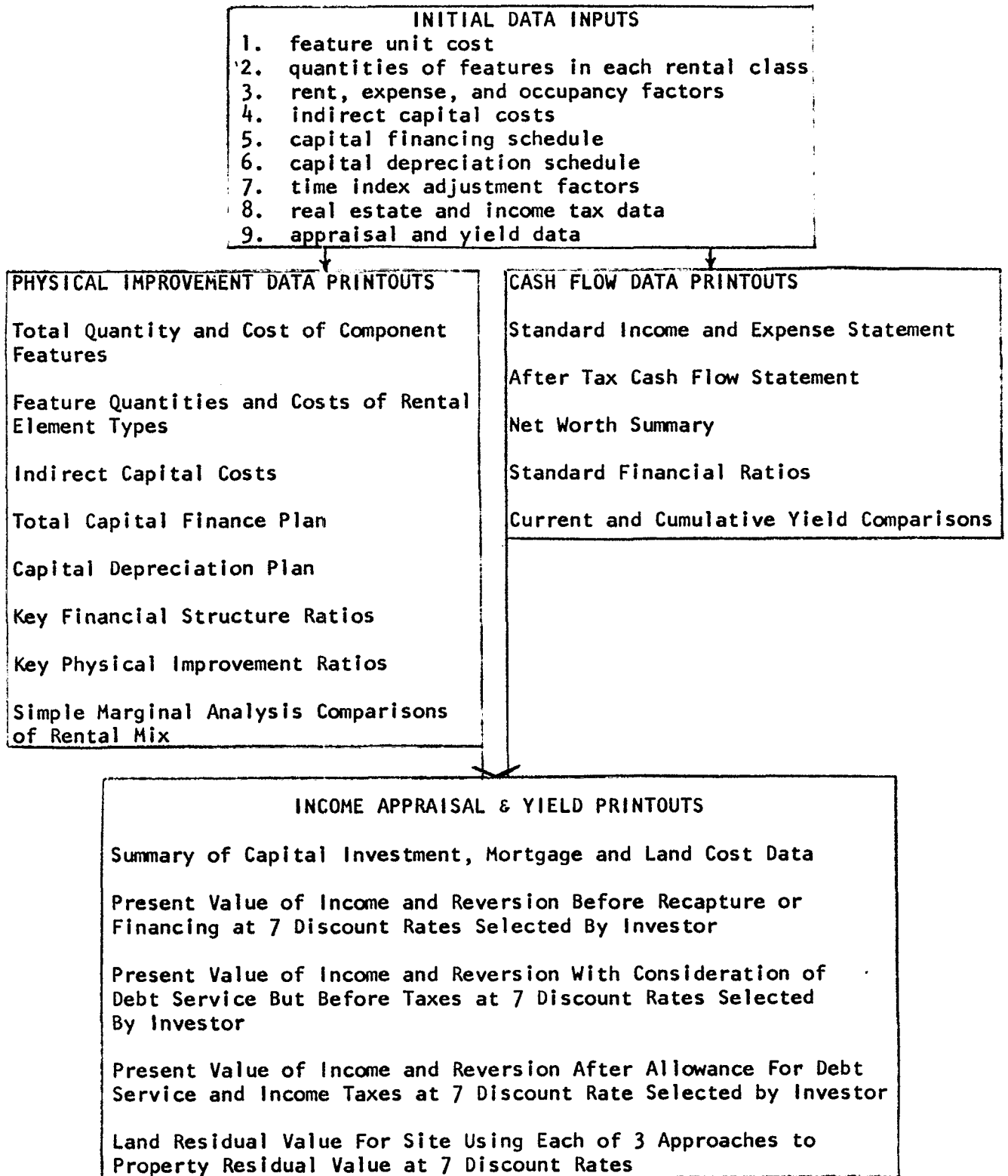
C. General Structure of Model

The basic structural concept of the model is to permit the analyst to define building blocks with which he can create alternative combinations of cost, operating characteristics, financial packages, and related cash flow dimensions. The basic building block is a component called a FEATURE, which can be given any kind of unit description, such as a square foot of area, a parking stall, a floor type, or even an entire building structure. The quantity of features used to describe any one project can be either varied or constant. VARIABLE FEATURES are combined into revenue generating elements, such as a one bedroom unit, or motel room, or office building floor. There may be different numbers of RENTAL ELEMENTS in a rental class, ranging from one element defined as a package of one site/one building to a rental mix of as many as 9 different types of apartment elements in different quantities in the same building. Rental elements not only have quantity and cost dimensions but a revenue and expense dimension as well. Aggregate quantities and cost determinations by the computer determine budget, capital structure and various measures of design efficiency. Aggregate revenue and expense calculations by the computer provide a basis for income, expense, and cash flow analysis as will be illustrated in detail in following sections. Period cash flow to the investor is then a basis for investment valuation.

A simplified flow chart is given in Chart I to suggest the type of outputs which can be generated if full details are available. However it should be emphasized that it is possible to generate valuable information from the sketchiest data. For example, a simple allocation of an offering price between building, equipment, and land where annual rent and expense ratios are known can produce a significant answer, although much additional marginal analysis of useable area efficiency, rental mix, or accounting accuracy will not be available for lack of required input. As frequently

CHART I

SIMPLIFIED FLOW CHART
OF
WISCONSIN REAL ESTATE INVESTMENT SIMULATION MODEL



James A. Graaskamp

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*Numbering system for whole
course packet*

as desired by the analyst, the model will then appraise period cash income and resale values by means of three different value approaches which can be classified as traditional, mortgage-equity and after-tax methods. Both the property residual and land residual values for all three approaches at seven different discount rates are given to facilitate comparison of results and decisions on the range of returns to be expected.

The model may be termed heuristic, for it runs through a single set of inputs and stops without searching for an optimal solution. Since the combination of alternative inputs is infinite, it is presumed that the analyst has narrowed his choices to a limited set of practical alternatives on the basis of his own judgment and experience. The product of the model is an extension of decisions already made or modified as a result of previous runs on the computer. It lacks the glamour of an optimizing model or decision making model, but it is doubtful that the art of real estate investment can either be made conclusively mechanistic or could be accepted as such by practitioners if it were. Any model builder must anticipate the resentment any computer system generates among real estate practitioners, and this model deliberately avoids infringing on matters of "judgment".

II.

CAPITAL BUDGET AND FINANCIAL STRUCTURE

A. Project Features

The flexibility of this project simulation model can be suggested by reference to the input forms which appear in Appendix I and output forms which are inserted as Charts II - VII. Both sets of information describe some hypothetical 40-unit apartment building. The basic building block is a FEATURE, which can be divided between features which will vary for each rental element and those which are constant for any one run of the model. The name of such features and the unit of description is limited only by the imagination of the analyst and 20 card spaces. In the example on

page 1 of Appendix I and Chart II, there is a square foot of living area, but the unit might have been one entire floor plan type of an office building. For the example functional areas are described by the square foot "SF", furniture by the piece "PC", and outside parking by the stall "STL". The first 10 features may vary for each type of rental element while the number of parking stalls for the project has been limited by the design to a constant of 40 units. Public area for corridors, lobbies, and whatever else the designer might define as public, has been limited initially to a constant ratio of 1 square foot of public area for each 5 square feet of rentable space, indicated by .2. Each feature is given two essential dimensions:

1. DIRECT COST PER UNIT is the essential piece of information which determines the detail level for any one project run. It is possible to allocate the offering price for an existing property between building, equipment, and land if that is the only cost data available. If more is known about cost, any type of unit definition is possible. If costs include indirect charges such as engineering fees, then it is unnecessary to include these items in the indirect cost input forms. The unit could be the price of the entire site or could be land per square foot at the discretion of the analyst. Furniture could be by piece, per room, per apartment or per floor depending on the flexibility of detailing desired or available to the analyst.
2. CSC - CAPITAL SCHEDULE CODE is a means of classifying each kind of feature according to the method of its financing or the formula for its tax depreciation. Rentable space is always classified as CSC #1, non-rentable space as CSC #2, and land as CSC #3 to allow

PROJECT FEATURES - COMPONENTS

CODE		COST PER UNIT	ADDITIONAL CONST.	UNITS PER REA	TOTAL	
					UNITS	COST
1	LIVING ROOM	SF 6.500	.000	.000	8976.0	58344.0
2	KITCHEN	SF 15.000	.000	.000	4088.0	61320.0
3	BEDROOM 1	SF 6.500	.000	.000	5796.0	37674.0
4	BEDROOM 2	SF 6.500	.000	.000	2794.0	18161.0
5	FOYER	SF 6.000	.000	.000	996.0	5976.0
6	STORAGE	SF 10.000	.000	.000	2210.0	22100.0
7	FURNITURE	EA PC 50.000	.000	.000	72.0	3600.0
8	BASEMENT STORAGE	SF 4.500	.000	.000	1900.0	8550.0
9	LAND	SF 1.500	.000	.000	55200.0	82800.0
10	BATHROOM	SF 20.000	.000	.000	2184.0	43680.0
11	PUBLIC AREA	SF 7.000	.000	.200	5788.8	40521.6
12	OUTSIDE PARKING	STL 300.000	40.000	.000	40.0	12000.0
TOTAL DIRECT CAPITAL COST						394726.6

the computer to calculate building efficiency, land improvement ratios, and other related items. Beyond this minimum classification restraint the analyst may have as many as six additional capital schedule classifications as there are financing methods and depreciation schedules as will be further described below.

B. The Rental Element

The RENTAL ELEMENT is defined by combining various quantities of features. For example on Chart III in the demonstration project there are 4 rental elements, efficiency apartments, one bedroom apartments, 2 bedroom apartments and 2 bedroom apartments furnished. There can be as many as 9 elements consisting of various quantities of 10 different variable features. Each type of element is given a code number, and for each run of the computer it is necessary to specify the quantity of each type of element in the rental mix. The quantities of features per element multiplied by the number of elements and then summarized for all elements aggregate to the total quantity and cost of each feature which are added to constant feature costs to obtain total direct capital cost. This breakdown of rental elements allows the investor to test different mixtures of rental elements, modification of feature specifications in each element, and distinct element costs relative to rents and expenses for each. The definition of a rental element and its name tag are left to the discretion of the analyst. It could be as limited as an entire building investment defined as a combination of 3 features - building, equipment and site or as a rental package such as a full floor of office space plus parking spaces, or 1,000 square feet of retail space and one parking stall, or a single revenue unit such as a theater seat, motel room, a table for four, or a display window. Each rental element has an income and an expense dimension found on page 2, Appendix I and Chart IV:

1. RENT PER PERIOD is the gross rent for one rental element of each rental class type. It is important that all calculations related to time have the same common denominator. If mortgage payments are to be calculated for a regular monthly payment mortgage, then rents must be stated per month. If the rental class type is simply defined to include an entire building as a single type, then the rent must be given for the gross expected from all rental elements in the building. In this illustration there are 4 efficiency apartments each renting for \$110 per month.
2. FIXED EXPENSES refer to those expenses that are constant in any one period regardless of occupancy. These expenses can be stated as a fixed amount per period (a month in this case) for each rental element or they can be determined by relating expenses per square foot to the total area enclosed by a single element. Some services offer expense cost per square foot of rental area and some developers maintain records in similar fashion. The aggregate fixed expenses for any one period consist of the number of units for rent times the expense per unit plus the number of square feet for rent or rented times so many cents a square foot.
3. VARIABLE EXPENSES are designed to fluctuate with occupancy. The expense item may be constant for each period or per square foot or a combination of both. The variable expense for each unit times the number of elements in each rental class times the occupancy factor for each rental class as explained further in III-D is combined into the period expense statement which is printed as part of the operating income summary.

Each rental element is analyzed in terms of quantities, costs, and areas of those feature components which were used to define the element as in Chart III. Total cost for a single rental element represents direct cost only and is allocated as a percentage to each feature item as well. Area allocations include only those features classified by the capital schedule code number #1 for rentable area or #2 as nonrentable area. Quantities of features in each rental element multiplied by the number of each element are then summarized in Chart II and then given as an aggregate cost labeled total direct construction cost. Accuracy of the descriptive word "direct" depends on the ability of the analyst to describe feature unit cost with precision as distinct from accounting definitions of indirect cost for carrying charges, professional fees and the like during construction.

C. Indirect Capital Budget Allowances

The TOTAL CAPITAL BUDGET is a summary of all direct costs on the capital schedule and provision for indirect costs which would be capitalized. Reference to page 3 of Appendix I reveals a card for INITIAL EXPENSES, those items of indirect cost and carrying charges which should be allocated to the capital budget rather than initial operation. These expenses can be introduced as a fixed amount, as a percentage of the first period rents, or as a percentage of direct capital cost or as any combination of these three. Engineering fees, insurance costs, and other related items of work, and premiums paid for financing might be expressed as initial fixed amounts or as a percentage of cost. Expenses expressed as a percentage of rent would generally refer to marketing costs related to renting projects or carrying the project during the start-up period. If the loan ratio is a high percentage of the direct capital cost, then the discounts and loan fees could be expressed or converted to a percentage of cost base. The

CHART IV

CAPITAL SCHEDULE

CODE #	-CAP. SCHED.	DEPRECIATION %BASE TERM METH	MORTGAGE / FINANCING %BASE TERM INTEREST	PAYMENT	TOT.COST
1	BUILDING RENTABLE	100. 480. 2.00	80. 300. .50%	1318.52	255805.00
2	BUILDING NONRENTABLE	100. 480. 2.00	80. 300. .58%	228.29	40521.60
3	LAND	. . .00	80. 300. .58%	466.48	82800.00
4	PARKING	90. 120. 2.00	80. 300. .58%	67.60	12000.00
5	INITIAL EXPENSES	90. 480. 2.00	80. 300. .58%	276.24	49032.66
6	FURNITURE	100. 72. 2.00	90. 60. .66%	65.57	3600.00
TOTAL PERIOD DEBT SERVICE				2422.71	
TOTAL CAPITAL BUDGET					443759.26

TOTALS

IMPORTANT RATIOS

TOT BLDG AREA	TBA	34732.80	BLDG EFFICIENCY	TRA/TBA	83.33%
TOT RENTABLE AREA	TRA	28944.00	GR PER UNIT AREA	GR/TRA \$	.21
LAND COST	LC	82800.00	BLG COST/UNIT	TCB-LC/TBA \$	10.39
TOT IMPROV COST	TCB-LC	360959.26	DEBT RATIO	TM/TCB	80.0%
TOT CAP BUDGET	TCB	443759.26	LAND RATIO	LC/TCB	18.6%
TOT DEPRECIABLE BASE	DB	354855.99			
TOT MORTGAGES	TM	355367.40			

MISCELLANECUS EXPENSE INPUTS

R.E. TAXES .20% OF TOTAL CAPITAL BUDGET PER PERIOD

PLUS \$.FIXED DOLLAR BASE

ANNUAL INCOME TAX RATE- 30.0%

INITIAL EXPENSES- \$ 5000. FIXED, PLUS 75.00% OF FIRST PERIOD RENT

PLUS 10.00% OF DIRECT CAPITAL COST

advantage of such a treatment would be that financing charges would adjust automatically as the scale of the project or design changes modify direct capital cost and size of loan. Initial expenses must be given a capital schedule code number and can be financed, and depreciated individually or as part of other items on the schedule code. For those expenses which can be charged against operating income during the initial periods of operation, it is possible to introduce those into the operating statement by use of time index factors to be discussed later in III-D of this report.

III.

CASH FLOW INPUTS AND ANALYSIS

A. General Expense Items

In addition to rent and direct costs related to each rental element, there are expenses related to the overall project and demands on cash for financing charges, amortization, income taxes, and returns to the equity investor. General expense items which are not easily charged to any one rental class would include:

1. PROPERTY TAXES stated as a fixed amount per period for an existing property investment or as a percentage of capital cost for proposed project where design elements may change for each run of the computer. In either case the tax computed represents only the initial period property tax for this amount is modified in future periods by the time index factor for real estate taxes. To determine the rate of the property tax per period it is important to convert the property tax rate in any community to a cost of replacement base, then reduce for the community equalization factor, and then divide by the number of periods per year appropriate

to the period chosen for the model. The basic tax calculation is applied to total capital budget to determine the basic tax for the initial period, but this basic tax can be modified by the index factor discussed below to recognize long term trends towards rising property taxes in any particular community or short term adjustments due to relationship of completion dates to assessment dates, partial assessments during construction, or other abatements appropriate to the project. Such tax adjustments need only be related to the tax base and then introduced by use of the index factor.

2. TAX DEDUCTIBLE EXPENSES related to initial marketing efforts or inefficient operations during the shakedown period can be introduced by modifying the normal operating base figures for fixed and variable expenses with the index factor device.
3. SHORT TERM WORKING CAPITAL DEFICITS for expenses which are not capitalized through the indirect capital cost category are assumed to be financed at a specified interest rate called working capital loan interest (WK. CAP. LOAN) on page 3 of Appendix I. Short-term loans are only amortized by full application of net after-tax cash income and no spendable cash is assumed to be available for the investor until working capital loans are repaid. This assumption has been made explicit in the third generation model now under preparation for commercial use and will appear on the outputs as indicated on the dummy output in Chart VI.

B. Mortgage Finance

The financing for each component of the capital schedule code is specified on page 3 of Appendix I. In the model now being programmed, period calculations will be internalized to simplify inputs to annual figures only but for the present:

1. % RATIO refers to the ratio of the loan to capital budget and not to appraised value. In the day of certified cost, this is not an unreasonable assumption. Where the capitalized value of the project design finally selected indicates additional mortgage money is available and the default ratio is low, the ratio in this column can be changed to produce a higher mortgage figure for the final analytical run of the program.
2. TERM of the mortgage is the amortization period for level payment mortgages. The time period factor must be consistent with the period chosen for analysis, just as in determining useful life for depreciation. If mortgage financing is to be on a monthly basis, then this mortgage term is stated in months and all other time factors for the model must also be available in months, including rent, expenses, depreciation, real estate taxes, and time index factors. If mortgage payments are to be quarterly, all other time related factors must also be quarterly.
3. INTEREST is stated as the interest per period chosen for mortgage payments. It may refer either to level term mortgages or to CONSTANT PAYMENT mortgages where an even dollar amount can be specified for payment on principal each period. The generalized formula for amortization on a level payment basis is built into the program so that separate interest and principal payments on each financing component are calculated for each period. Each interest item and principal item is then aggregated for print-out on the period summaries of interest and principal as required.

C. Provisions for Income Taxation

In addition to tax deductible cash expenses, the income tax computation involves determination of non-cash charges for depreciation, determination of net taxable income before and after cumulative tax loss carry-forwards, and capital gain taxes upon sale of the building.

1. DEPRECIATION requires a statement of the percentage of each capital schedule code class which can be depreciated, that is 100% less expected salvage value. The useful life of the class is described as the TERM in periods, defined to be consistent with the common time denominator of all period entries. ACCOUNTING METHOD refers to the accounting modification of straight line depreciation to be used by the investor. The computer begins by calculating straight line depreciation per period and then multiplies this figure by the factor chosen to determine depreciation per period. Straight line depreciation would be indicated by 1.0, 150% declining balance by 1.5, 200% declining balance by 2.0 or any other factor for the depreciation plan. The computer does not use the sum-of-the-digits method.
2. INCOME TAXES are expressed as a percentage of net income. The rate can be an average of the marginal rate paid by the investor in this range of income; it may combine federal and state rates, or can reflect a weighted rate for a corporation or syndicate of investors. Capital gain tax computation is necessary to determine after tax cash returns to the investor upon resale, and extension of the Ellwood technique to after-tax problems. In the present model the approach has been simplified by always using one half

MARGINAL ANALYSIS BY ELEMENT CLASS

	GR	TRA	TCB	%INC/%COST
TOTAL PROJECT	6080.00	28944.00	443759.26	
AS A % OF TOTAL				
EFFICIENCY APT	7.89%	6.12%	6.06%	130.20%
1 BEDROOM APT	32.23%	31.77%	31.56%	102.13%
2 BEDROOM APT	42.10%	45.16%	44.77%	94.04%
2 BEDROOM FURNISHED	17.76%	16.93%	17.60%	100.92%
GROSS INCCME 6	36480.00			RESALE VALUE 465947.22
EFF. GROSS %OCC.OF 25.7%	9120.00			LESS PRIN.BAL. 352188.38
LESS FIX. EXP. 4803.60				NET WORTH 113758.84
LESS VAR. EXP. 3923.28				
LESS R.E. TAX 5325.11				CURRENT PD. RETURN -.20221
NET INCOME -4931.99				PROJECT RETURN -.15131
LESS DEPREC. 10019.06				PRODUCTIVITY RATE -.0105
LESS INTEREST 11357.26				CASH RETURN -.2202
TAXABLE INCOME -26308.32				EXPENSE RATIO .385
TAX OFFSET -22871.01				DEFAULT RATIO .783
LESS TAXES .00				DEBT COVER RATIO -.339
PLUS DEPREC. 10019.06				
LESS PRIN. PMT. 3179.04				CUR. PRIN.PMT/CUR.DEPREC. .317
CASH INCOME -19468.30				TOT. AMOR./TOT. DEPREC. .317

the income tax rate on the taxable gain on sale. The taxable gain is computed simply by subtracting the undepreciated balance of total capital budget from resale value, without adjustment for disallowed accelerated depreciation in excess of that recognized by the 1964 IRS code. The program now in process is attempting to calculate readjusted depreciation for capital gain purposes without loss of flexibility as to time period denominator. Nevertheless, it should be emphasized that it was not felt necessary to compute the full marginal tax schedule with accounting accuracy as the model is designed to forecast rather than provide for historical accounting.

3. To apply income tax loss carry-forwards to taxable income, it is necessary to instruct the computer as to the number of periods in which to accumulate negative taxable incomes before the potential tax credit expires. The input position follows directly on the statement of the income tax rate to be applied to taxable income on the bottom of page 3, Appendix 3. For a model assuming a monthly time denominator, a permissible five year carry-forward would require specification of a 60 period moving total of negative taxable income. As the real estate project is assumed to stand alone without complementary income sources, a full tax loss offset would generally be applied to future income from the project. If the investor wishes to apply taxable income loss offsets to other income, it is only necessary to carry forward enough periods in a model to represent one taxable year.

D. Time Index Factors Adjustments

Revenue and cost inputs in dollars to this point represent base period figures which may be adjusted by indexes per period for rent, real estate taxes, fixed expenses, variable expenses, resale price, and occupancy by rental element class. Indexes give the model a means of recognizing the time line of development, rentup periods, and the various cycles of revenue cost and resale values (See III-G) which characterize dynamic real estate investment. There is no necessity that the base period for the cash flow items above be the first month of normal operation. Revenues may be held to zero during a construction period while fixed costs gradually rise to an operational level, shakedown, and only then reach the normal point indicated for fixed and variable expenses. Rental revenues can begin at zero build as occupancy improves, and then reflect changing price levels by changes in the rent index. Beginning with the assumption that the time unit for the index is the same period chosen for mortgage amortization, it is only necessary to make assumptions as to the cycle of the index numbers for each category so to account for each period in sequence to the point where the computer is to stop computations:

1. BASE PERIOD need not be the first month of normal operation. It simply marks the beginning of cash flow analysis as opposed to capital outlays for development.. It is necessary to indicate the next base period each time the index changes and to finally indicate where the computer is to stop computations by placing a 99 in the base period column. The analyst may have as few or as many period outputs and index adjustments as desired.
2. PER CENT OF BASE assumes that original cash flow inputs represent an index of 100 and that the analyst can cycle these items over time

CHART VI

DUMMY FORMAT OF CASH FLOW STATEMENTS
FOR SECOND GENERATION REAL ESTATE INVESTMENT ANALYSIS MODEL

REAL ESTATE CAPITAL STRUCTURE & BUDGET

GROSS INCOME	6	33600.	RESALE VALUE	425453.
EFF. GROSS OCC. OF	25%	8400.	LESS PRIN. BAL.	321239.
LESS FIX. EXP.	4804.		LESS WK.CAP. LOAN	18474.
LESS VAR. EXP.	3923.		NET WORTH	85740.
LESS R.E. TAX	4862.		CHANGE IN N.W.	2940.
NET INCOME		-5189.		
LESS DEPREC.	9374.		CURRENT PD. RETURN	.0021
LESS INTEREST	10273.		PROJECT RETURN	.0342
TAXABLE INCOME		-24537.	PRODUCTIVITY RATE	.0121
TAX OFFSET	-21320.		CASH RETURN	.0000
LESS TAXES	0.		EXPENSE RATIO	.404
PLUS DEPREC.	9074.		DEFAULT RATIO	.796
LESS PRIN. PMT.	3011.		DEBT COVER RATIO	.090
CASH INCOME		-18474.		
WORKING CAP. LOAN	18474.		CUR. PRIN.PMT/CUR. DEPREC.	.321
CASH TO INVESTOR		0.	TOT. AMOR./TOT. DEPREC.	.321

GROSS INCOME	12	33600.	RESALE VALUE	425453.
EFF. GROSS OCC. OF	82.%	27720.	LESS PRIN. BAL.	318228.
LESS FIX. EXP.	4804.		LESS WK. CAP. LOAN	18378.
LESS VAR. EXP.	3923.		NET WORTH	88847.
LESS R.E. TAX	4862.		CHANGE IN N.W.	3107.
NET INCOME		14131.		
LESS DEPREC.	8703.		CURRENT PD. RETURN	.0132
LESS INTEREST	10178.		PROJECT RETURN	.0362
TAXABLE INCOME		--4750.	PRODUCTIVITY RATE	.0332
TAX OFFSET	-28946.		CASH RETURN	.0000
LESS TAXES	0.		EXPENSE RATIO	.404
PLUS DEPREC.	8703.		DEFAULT RATIO	.796
LESS PRIN. PMT.	2916.		DEBT COVER RATIO	1.079
CASH INCOME		1037.		
WORKING CAP. LOAN	-17437.		CUR. PRIN.PMT/CUR. DEPREC.	.345
CASH TO INVESTOR		0.	TOT. AMOR./TOT. DEPREC.	.333

by stating the index as a percentage of the initial input. For example experience may indicate that real estate taxes will rise an average of 2% a year for a 5-year investment term. So for the first 12 monthly periods real estate taxes will have an index of 100, for the next 12 periods an index of 102, then 104, etc.

3. ENDING PERIOD defines the length of time the index on any one line prevails for each of the categories. It is possible to vary the ending period in any way so long as the time unit is consistent. For example during the rentup period it might be desirable to vary the occupancy factor every 3 months; during the initial years of normal operation, revenue and cost might be held constant for 2 years at a time, and then after the fifth year inflationary or deflationary expectations could be indicated yearly. In short occupancy might vary significantly over short periods initially; revenues and expenses might shift at different rates over the intermediate term reflecting less elasticity of rent than expenses; and resale values may shift with alternative assumptions as to inflation, local markets, and economic obsolescence.

E. Capital Budget Output Analysis

Once all of these inputs are available, some useful outputs may be at hand. In addition to the cataloging of input data and assumptions for those who read the final outputs which appear in Charts II - IV, (4) some useful computations begin to make their appearance on Chart IV, i.e. some totals and ratios relative to the scale of the project. The captions on these summary statements are self-explanatory and of course the calculations involving area can only be performed where some of the feature components are defined in terms of floor area and are classified as either #1 or #2 in the capital

(4) In addition there are complete checks on card inputs and sequence areas which have been omitted from the charts.

schedule code. Some simple marginal analysis of these totals as on Chart V is possible for those projects where rentable area can be allocated to various rentable classes and a further limiting assumption can be made that there should be a relationship of gross rental power to total capital budget allocated to each rental class. In this analysis the gross rent and rentable area allocations are easily identified from the data concerning each rental class detailed on Chart II. The total capital budget is allocated to each rental class according to the proportion of direct cost per class generated from element cost times number of elements.

1. The revenue power of any one rental class relative to the others in the project is then suggested by the ratio of the percentage of total income generated to the percentage of total capital budget allocated to that rental class. To a lesser extent the percentage of gross rent generated relative to the total rentable area allocated also measures the efficiency of investment in any one type of rental class.
2. For example, in the results on Chart V, efficiency apartments provide 7.9% of gross revenue rental potential while occupying only 6.1% of total rentable area and requiring about 6% of the total capital budget, suggesting 32% more income per dollar spent than would be realized by investing in two-bedroom furnished apartments. By the same token the investor is alerted that two-bedroom apartments (unfurnished) either offer too much space or too many features as represented by the total capital budget allocation for the rent money charged. Either the plan is too generous or the rent too low. Presuming rents are established from the market, the inference is that the architect has been somewhat liberal with features and investment in this rental class. Of course,

such analysis could be modified if rental class rents were adjusted to reflect different vacancy levels or tax free cash returns as modified by furnishings, etc., or where rental elements were known to have significantly different expense ratios.

Of course the final standard of capital budget expenditures is the relationship of capital cost to investment value as examined later in the paper.

F. Cash Flow Outputs

An income statement summary and an analysis of current results is one major basis for investment evaluation. The program can be instructed to compute income and expense figures per period, and aggregate results until summary is requested for print-out. In this example on Chart V, the computer was instructed (See page 3, Appendix 1) to summarize monthly results each six months and then to appraise these results assuming resale every five years (60 months). In this case gross income represents potential revenue while effective gross represents net rents received for each rental class as adjusted by the occupancy index. Per cent of occupancy is a calculation derived from $\$9,120/36,480$ and is not the per cent of occupancy assumed for six months. It is the weighted average of monthly results. The balance of the cash flow statement has been derived and aggregated from the inputs examined earlier and appears in a format on Chart V which should be self-explanatory.

Cash income footing in the present model does not go far enough for purposes of analysis, and so the need for short term loans to cover working capital deficits has been made explicit. All cash deficits will be accumulated in the new version as in Chart VI and then paid off from future cash income before cash is made available to the investor. Cash available to the investor after all claims on cash flow have been met are assumed to be distributed

APPRAISAL ANALYSIS OF PROJECT

INITIAL COSTS- TCB 443759.26, LC 82800.00, TIC 360959.26
 TM 355367.40, CASH EQUITY REQUIRED 88391.86

VALUE BASED ON INCOME USING THREE DIFFERENT APPROACHES

PRESENT VALUE OF RETURNS, LESS \$ 360959.26 TIC, EQUALS RESIDUAL LAND VALUE

PROPERTY APPRAISAL

LAND APPRAISAL

%	TRADITIONAL	B/4 TAX	AFT TAX	TRADITIONAL	B/4 TAX	AFT TAX
5.20	542198.24	524148.12	489343.50	181238.98	163188.86	128384.24
6.00	523655.74	517638.56	483982.25	162696.48	156679.30	123022.99
7.00	501446.92	509846.21	477567.92	140487.66	148886.95	116608.66
10.00	440778.58	488587.02	460088.98	79819.32	127627.76	99129.72
12.00	404833.93	476013.48	449767.30	43874.67	115054.22	88808.04
15.00	356838.93	459256.30	436032.93	-4120.33	98297.04	75073.67
20.00	290283.65	436096.17	417100.09	-70675.61	75136.91	56140.83

GROSS INCOME	66	40128.00
EFF. GROSS %OCC.OF	96.7%	38522.88
LESS FIX. EXP.	5283.96	
LESS VAR. EXP.	4315.60	
LESS R.E. TAX	5857.62	
NET INCOME		23065.69
LESS DEPREC.	7037.79	
LESS INTEREST	10144.84	
TAXABLE INCOME		5883.04
TAX OFFSET	-.01	
LESS TAXES	1764.91	
PLUS DEPREC.	7037.79	
LESS PRIN. PMT.	3998.04	
CASH INCOME		7157.88

RESALE VALUE	510323.14
LESS PRIN.BAL.	314422.77
NET WORTH	195900.37
CURRENT PD. RETURN	2.12408
PROJECT RETURN	.05451
PRODUCTIVITY RATE	.0451
CASH RETURN	.0809
EXPENSE RATIO	.385
DEFAULT RATIO	.737
DEBT COVER RATIC	1.630
CUR. PRIN.PMT/CUR.DEPREC.	.568
TOT. AMOR./TOT. DEPREC.	.443

as dividends. It is this cash dividend in each period which is discounted as an internal period return to arrive at present value of the income for the mortgage-equity approach and the after tax mortgage-equity approach.

G. Net Worth Analysis and Investment Yield

With every cash flow statement there is a review of net worth prior to a statement of yields according to various investment theories. Resale value represents total capital budget as modified by the depreciation time-index factor. This time factor may represent a number of elements in investment expectations. Should the investor also be the contractor whose profits and overhead were not included in the capital budget, the resale index could reflect an immediate write-up of value. Of course resale value should always be stated as net of any brokerage or resale costs, to represent liquidating cash value of the project. If total capital budget were presumed equal to market price, the resale value index might be 95% to reflect 5% transaction costs. With an index less than one, net worth will always reflect the true equity cushion and the change in net worth will reflect the maximum cash recovery potential of cash used to reduce the balance of debt. After such initial adjustments by means of the resale index, the index can be used to indicate market recognized depreciation or appreciation of the property. In this way taxable income can reflect tax definitions of depreciation while investment yield will reflect anticipated true erosion of capital, if any. Any index of resale value is an arbitrary, prospective assumption, but once other variables in the model have been decided upon, the final runs of a project can be based on a resale index assuming the most probably foreseen up-side and down-side value fluctuations in order to produce a definition of yield range expectations similar to the graph in Ellwood.

Net worth is resale value less the balance due on debt on the capital schedule code and short term working capital loans. For some measures of investment yield we are interested in discounting change in net worth from the previous reporting period as well as cash flows and remainders. These relationships will be made more explicit in the format on Chart VII.

IV

INCOME YIELD AND APPRAISAL VALUATION

A. Criteria of Investment

Investment in rental real estate is presumed to be conditional on a satisfactory rate of cash dividends per period and capital gain on resale consistent with investor determination of risk and alternative investment opportunities. This model offers several criteria for dividend evaluation, for discounting capital gains, and for comparing alternative investment yields. The model presumes that the discount rate chosen by the investor makes adequate allowance for risk and so the risk factor is left implicit. However portfolio management by means of Bayesian probability statements could be introduced in the next generation of investment models. Of course cost and revenue estimates with probability dimensions presume statistical data banks on these items such as some of the large life insurance investors in real estate are beginning to collect. However, for this model the final judgment as to whether rate of return in any of the forms given is adequate must be made by the investor for the model says nothing objective about risk.

B. Dividend Yield Measures

Reference to Chart V will indicate a number of period yield calculations. In reading the model returns, it is important to remember that the yield is for the six month period summarized and must be multiplied by two to approximate an annualized rate of return. In the program now in process, the computer

will automatically annualize the yield figures to state them in a form more familiar to the investor. To meet various investor needs, yield determinations are made as follows:

1. CURRENT PERIOD RETURN is measured by adding spendable cash for the period (one month) to the change in net worth from the previous period and then dividing by net worth at the beginning of the period. Change in net worth is overstated whenever the index on resale value changes in an upward direction, thus jolting current period returns from its previous pattern.
2. PROJECT RETURN is a moving aggregate of the previous six periods for each of the elements in the current period return calculations. The reason for this adjusted rate of return is to smooth out the rate pattern due to changes in the resale value index in any single period. This ratio may be the most significant analytical tool of the model for it measures when and to what degree the rate of return is falling or rising as leverage and tax cover decline and the liquidating value of the equity grows due to amortization and inflation. It could suggest timing of refinancing or resale.
3. PRODUCTIVITY RATE is the traditional measure of rate of return on invested capital, calculated by dividing net income before interest or depreciation by the total resale value of the property. It is a measure of the overall capitalization rate on invested capital and a reciprocal of this figure would represent the net income multiplier.
4. CASH RETURN is a direct ratio of cash income for the investor after all claims in cash have been received for the period divided by net

cash originally invested, that is the difference between total capital budget and total mortgage financing, thereby offering a measure of cash dividend returns to the investor.

C. Financial Ratios

For the mortgage lender and the tax accountant cash flows are also analyzed in terms of the expense ratio to gross income, the default ratio including expenses and debt service as a percent of gross income, and a ratio of net income available for interest and principal payments. For the tax accountant there is a ratio of principal payments to total depreciation cover to suggest how many tax free dollars are absorbed by loan payments, or conversely, what portion of the depreciation shelter is available for cash to the investor.

D. Appraisal of Investment Value

The final standard of investment performance is the relationship of the sum of all discounted returns to the investor to the total capital budget necessary to create the investment opportunity. The analysis of this relationship as defined for the model is demonstrated on Chart VII. This type of analytical output is produced as often as required by the investor, and in this case was triggered for seven selected discount rates at the end of each five years or ten six-month summary cash flow statements. The required input instructions can be seen on the bottom of page 3 of Appendix I. Instructions for printout appear under the PERIODS OF PROJECTION - income statement and valuation statement. Bases for rate of return, in this case 5.2 to 20%, are stated as an annual rate or nominal rate and then reduced to a rate per period by instructing the computer as to the number of periods in a year--twelve in the example.

The output format for present value analysis as seen in Chart VII then provides a review of total capital budget, land cost, total improvement cost, total initial debt, and cash equity required to facilitate comparison with present values derived for each of seven discount rates. It is important to note the distinction in the language which describes this process as appraisal of investment value because this value is only true for a very specific set of design, financing, and tax assumptions and may not reflect market price in any way. It suggests only the highest price which an investor might pay under the specific conditions set and still realize the rate of return specified for the equity position. The property residual type of appraisal in the first three columns minus the total improvement cost contemplated produces the residual land value in the right hand three columns. Selection of the proper investment mix of input variables by the individual investor could involve a matrix of criteria such as that investment which produces the highest land value in excess of \$82,800 at no less than 12% return after taxes, has the lowest cash equity required, and has a total capital budget of less than \$450,000. In addition, there could be other dimensions relative to loan ratio, default ratio, expense ratio, dividend yield, etc.

The present value methods can each be described as follows:

1. The TRADITIONAL discount method is the present value of each period net income, including negative income periods as negative values, plus the present reversion value of the net resale price. As in traditional appraisal theory there is no recognition for interest or taxes on income, and recapture of investment is at a rate implicit in the Inwood process. As the equity rate is applied to

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the total income, there is naturally a sharp reduction in value of the total project with each increase in the discount rate. In this case a discount rate of about 9% would produce an investment value about equal to the total capital budget required, suggesting that the project has an overall rate of return on capital of about 9%, a result consistent with the annualized productivity rate calculated per six month period earlier.

2. The B/4 TAX discount value is shorthand for an approach similar to the Ellwood mortgage-equity approach to value (5) and the textbook view (6) but computed with variable incomes (7) rather than the normalized income to which weighted average capitalization rates or split rates are applied. The method computes the present value of net income less interest and principal payments each period plus the present value of the reversion to equity (resale less mortgage balance due), the sum of which is added to the original balance of total mortgage debt. As presently constructed, it treats periods of negative income by adding a negative present value for each period to the present value sum for the periods, an approach which introduces a significant distortion in value where cash deficits are prolonged over many periods or appear in the later stages of the projection period to be appraised. Deficit cash flows should appear as an addition to total equity required or as a compounding charge against other positive period returns. It is for this reason that working capital loans to meet any period of negative cash income were introduced as in Chart VI to charge future income with the

(5) L.W. Ellwood, Ellwood Tables, Second Edition, American Institute of Real Estate Appraisers, Chicago, 1967.

(6) Richard U. Ratcliff, Real Estate Analysis, McGraw-Hill Book, Co., New York, 1961; See Chapter VI.

(7) Paul F. Wendt, Op. Cit.

interest cost of borrowed money and to reduce the reversion value by the full amount of the debt rather than a discounted value of the debt.

3. AFTER-TAX valuation of returns to equity represents a further departure from current income appraisal methods. This value represents the total present value of cash to investor (which is reported after taxes) per period plus the present value of net worth. In this case the net worth is the undepreciated balance of the investment less the capital gains tax computed less mortgage balance and short term loans due at the end of time of sale. To this present value product is added the value of the original mortgage debt, which of course is the present value of debt service payments excluded in the determination of spendable cash. The productivity of short term capital is implicit as interest for the money was charged to taxable income and repayment was made prior to determination of spendable cash or net worth remainders.

The array of values for seven alternative rates of return and three methods of discounting makes it possible to estimate equivalencies as between traditional, mortgage equity, and after-tax rates of return. For example in this case a 9% overall rate of return is equivalent to about an 18% return to equity before taxes and a 14% return to equity after taxes. These can be derived through interpolation of these results or through modification of selected rates of return and a second run of the model. These equivalent yields make it possible to compare the real estate investment to specific alternative investment opportunities in real estate, bonds or stocks.

APPLICATIONS OF A SIMULATION MODEL

A. Design Analysis

The simulation model has been tested in a number of actual investment situations. It has worked best as an analytical tool in its present form on a student housing project in which student rooms were a standard, modular product, and where room shortage was such that the building was fully rented as soon as completed at well established contract rates. The investor-developer was very knowledgeable on cost of construction and operation and his costs were based on the modular unit.

Effective design analysis with this model assumes that the designer has reliable cost per unit estimates, though these need not be elaborate. The typical apartment builder is often unable to distinguish the cost of bathroom space and livingroom space. His only modular cost figure is \$9.33 per square foot of gross area on his most recently completed 16-unit building. The model would work using that simple cost figure, but more detail may be desirable for feasibility analysis of critical alternative design decisions.

For example, on one project involving a pair of apartment towers, the engineer had designed a standard square shaft for elevator, stairway, circulation corridor and utility core for the center of each square tower. This center portion was given a constant cost for 10 floors. The issue was then to test several floor plans for the rentable area. In addition to basic structure costs, we added the cost per running foot of sound wall, interior apartment partitions, carpeting, tile, and cabinetry. There was also a square foot cost for exterior wall and window. Four different towers in terms of gross floor area and typical apartment floor plans were tested to choose the best design concept for further refining.

For those seeking a computer model to test economic feasibility in the office of the architect or engineer, the model suggests a measure of feasibility more sophisticated than holding cost within a budget or to an overall rate of return. For example it would be possible to reduce the basic building block of features into further sub-sets of 10 cost items each, or additional sub-sub-sets making it possible to handle quantity costs for as many as 1,000 individual items. Further refinement of the time index feature would permit simulation of the impact of alternative critical paths of development on investment value or the desirability of staged development. These expansions of the basic model would require more computer capacity than we can command on no research budget, but the possibilities are well anticipated in a recent book on the dynamics of cost, time, and value of engineering-construction projects by John W. Hackney, entitled Control and Management of Capital Projects.⁽⁸⁾ Such a model does more than discipline the designer within the constraints of cost, time, cash flow, and value. Rather than holding to a clients budget, the designer is permitted to challenge the budget assumption itself, using variable revenue projections of the client and his experts, the cost expertise of the architect and the property manager, and the financial criteria of those committing capital to the project. How often has an architect or packaging developer presented his proposal in terms of values generated by the concept of internal rate of return on fluctuating cash flow?

B. Purchase Offer Analysis

The simulation model has been used to scan multiple listing offerings and develop offering prices which will produce a certain level of return

(8) John W. Hackney, Control and Management of Capital Projects, John Wiley & Sons, Inc., New York, 1965

upon implementation of a property management plan by the investor. Recent debate on component capitalization methods such as the Ellwood method has served to remind the real estate investor to provide for his profits as an explicit factor in determining his purchase bid. There is an old adage in real estate to the effect that profit is made because you buy well rather than because you sell dear. A cursory review of a listing sheet, inspection of the property, and some knowledge of the market should make it possible to define the opportunity in terms of a possible purchase offer, allocated to features identified as improvements, site, equipment, and additional \$100 units of remodeling or furnishing required. Given knowledge of appropriate rents, operating ratios, and financing terms, it would be possible to frame a financial outline of several alternative offers which would suggest the range of bargaining and the impact of alternative offers on rate of profit.

C. Mortgage Loan Application Analysis

Many lenders today screen loan applications with Ellwood method capitalization of income estimates to determine if the value derived will support the loan amount requested and the cost of the project as estimated. However, correlation of this income method and the cost approach based on normalized income is no assurance of the financial sanity of the project or the adequacy of equity resources of the developer. A model which analyzes cash flow deficits during rentup and the shifting demands on cash of the income tax burden gives a better picture of financial risk than current methods using static normalized income statements. Moreover, rate of return to equity and the residual value of the land based on alleged costs is a more revealing measure of investor motivation and credibility. With increasing interest in long term equity accumulation by those lenders seeking equity

participation in exchange for favorable financing, there is greater desire to scrap the assumption of normalized income in favor of forecasting period incomes shifting with changing operating ratios, price levels, and after-tax residuals.

D. Government Policy Analysis

One of the most interesting applications of the model to date has been to test the likely result of Madison density zoning bonus features for high density multi-family districts. With the aid of another University of Wisconsin computer model (9), all the sites zoned R-5 and R-6 have been identified in a 300 square block area around the University which can be acquired in different price ranges, such as \$5-6, \$6-7, and \$7-8 a square foot. One of our graduate students has designed modular standard efficiency, one, and two bedroom apartments with costs for several alternative construction methods. Test sites for each standard design building class with different rental mixes are being run with the model to determine how many apartment units could be built at a cost related to student rentals which would justify the estimated land cost. It should then be possible to project the maximum supply of rental units which might be built by 1975 for private profit under different FAR maximums under various provisions in the code on available supply of sites. For example, the standard FAR is 2.0 with a 50% site coverage assumption, 3.0 FAR with 30% site coverage (thereby requiring elevator construction) and 3.6 FAR under a controversial bonus provision to encourage construction of student apartments. First results indicate that it is virtually impossible to realize much financial advantage from these bonuses unless one owns a minimum of 3 lots - i.e. 99 X 132 feet. We can measure

(9) A model developed by Richard Garrigan of University of Wisconsin Construction and Planning Department to forecast group purchase prices of selected properties for institutional budgeting of future property assemblages.

the increment in plottage value with considerable precision and the likelihood that the value of existing improvements on given sites would encourage purchase and redevelopment. As an alternative to zoning bonuses for student housing, it will be possible to test the influence of 40 year financing through a state agency or of real estate tax modifications as stimulants to student housing, given current level of site acquisition costs.

E. Application to Valuation Theory

The investment model outlined here is simply the model-T of the next generation of valuation models for real estate. The thrust of these models might take several directions, including generations of new forms of capitalization rates, specialized models for specific real estate development problems such as subdividing, simplified models for use by real estate brokers, data bank models to generate comprehensive operating data, and finally better dynamic combinations of the design-construction-valuation process.

It should be possible to build tables of capitalization rates which add to the Ellwood coefficients some recognition of the influence of depreciable asset ratios to total value at progressive steps in the income tax rates. One of our graduate students suggested a set of nomographs for this purpose and prepared and illustrated an example. A computer program related to graphic output analysis might produce basic nomograph sets for common investment ratios.

At the University we are already building a model for land development investment analysis and pondering on a point of connection between investment model constraints and the constraints of the Land Use Intensity graphs of FHA multi-family performance standards. With time we would like to develop a model in which capital costs, revenues, expenses, and resale values

could be given range estimates with a probability distribution which in turn could produce probability statements on the rate of return expectation for equity as suggested at this symposium by Gerald Work of the Wells Fargo Bank. Dynamic investment models can modify planning theory, urban land policies of government agencies attempting to channel private investment activity, and investigation of the true cost of building code obsolescence, design forms without function, or consumer idiosyncracies.

One tenet of appraisal valuation theory deserving close examination is that of the three independent approaches to value, the market comparison, the income and the cost approaches, which should all converge on the same conclusion as to value. Rather than a correlation of these three disparate views of value, why not a synthesis of the valid elements of each of these traditional methods into a single approach to value by means of a dynamic simulation model? Revenue is estimated by market comparison of rents and prices of comparable properties. Market analysis and consumer surveys might provide data on the relationship of rents and amenities for the commodity "rental space". The engineering cost approach might be the source of capital budget and operating budget data, which would determine outlays of revenue. Defining revenue to include all cash receipts whether from equity, mortgages, rents, or resale, it would be possible to match revenues with outlays over time to determine net productivity. This productivity could be discounted by the capitalized income approach which would best characterize investor patterns of financing, taxing, and profit taking. It is more logical to correlate revenues, outlays, and profits over a sequence of time periods than it is to rationalize differences between three independent unrelated static valuation methods. Could it be that appraisers must use static

models to derive long term values because methods are not available to practitioners for treating mathematically the large number of variables in a more sophisticated, dynamic model of long term values? Could it be that the obvious lag in appraisal technique relative to investment technique has encouraged lawyers, architects, engineers, planners, and amateur investors to presume expertise in matters of investment analysis?

A dynamic model for evaluation of the design-time-finance constraints of real estate investment might provide a common denominator for economic feasibility to be shared by all of these groups. Certainly it could provide discipline and sophistication to professional education in the many fields which bear on real estate investment.

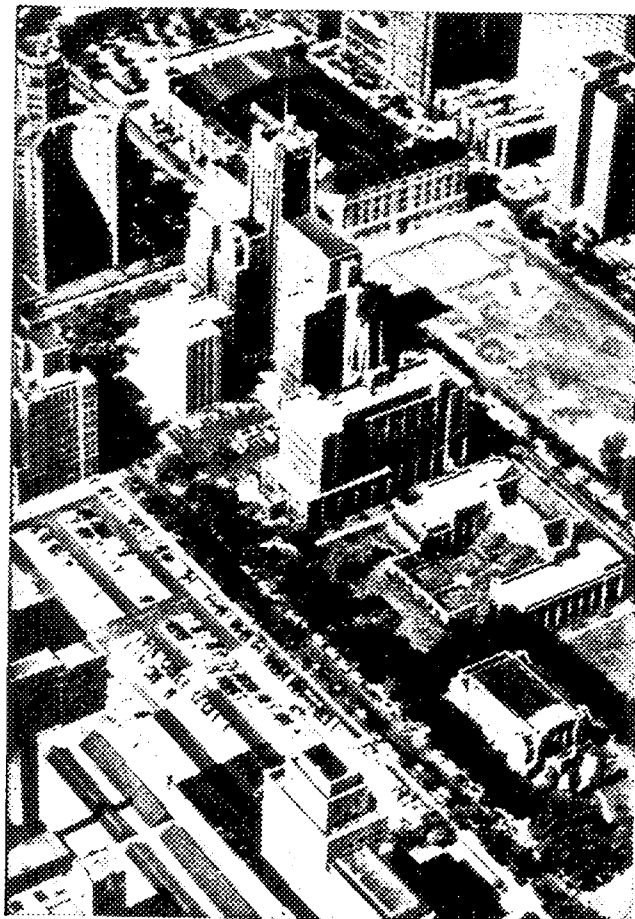
Mortgage Bankers Association
OF AMERICA

SCHOOL OF MORTGAGE BANKING



NORTHWESTERN UNIVERSITY

1969 SESSION



Course
III

Chicago campus of Northwestern showing Abbott Hall and Thorne Hall at lower right.

SCHOOL OF MORTGAGE BANKING

Course III

NORTHWESTERN UNIVERSITY

Sponsored by the Mortgage Bankers Association of America in
Cooperation with the School of Business, Northwestern University

June 29-
July 5, 1969 Strawn Hall—McCormick Building Chicago Campus
Class Schedule for Course III

Mortgage Loan Investment Policies and Practices and Special Considerations of the Mortgage Banking Profession

Sunday, June 29, 1969

6:00 P.M.

**Room 202
Abbott Hall**

**RECEPTION AND GET-TOGETHER
MEETING**

7:00-9:00 P.M.

**East Dining Room-
Abbott Hall**

DINNER

Chairman:

LEWIS O. KERWOOD, Director of Education and
Training, Mortgage Bankers Association of
America, Washington, D.C.

Speaker:

THE ACCORDION CONCEPT

ROBERT H. PEASE, Vice President, Mortgage
Bankers Association of America; Senior Vice
President, Draper and Kramer, Inc., Chicago,
Illinois

Monday, June 30, 1969

8:30-9:50 A.M.

**Strawn Hall-
McCormick Building**

A NEW VISION FOR AMERICAN CITIES

RICHARD BABCOCK, Partner, Ross, Hardies,
O'Keefe, Babcock, McDugald & Parsons, Chi-
cago, Illinois

- 10:00-11:45 A.M.** **MORTGAGE LOANS IN COMPETITION
WITH OTHER FORMS OF INVESTMENT**
LYLE F. EIKELBARNER, Investment Counselor,
American Farm Bureau Federation, and Amer-
ican Agricultural Mutual Insurance Company,
Chicago, Illinois.
- 11:45 A.M.** **GROUP PICTURE—All Course III Students
and Faculty**
Place: North of Thorne Hall
- 1:00-2:50 P.M.** **SELECTED APPROACHES TO APPRAISALS
OF THE ECONOMY**
DR. CHARLES LEE THIEMAN, Economist, Federal
Home Loan Bank of Cincinnati, Cincinnati,
Ohio
- 3:00-4:20 P.M.** **A CRYSTAL BALL LOOK AT BUSINESS**
JAMES M. DAWSON, Vice President and Econo-
mist, The National City Bank of Cleveland,
Cleveland, Ohio.
- 4:30-5:00 P.M.** **THE SCIENCE AND PREDICTABILITY OF
INTEREST RATES**
DR. CHARLES LEE THIEMAN
- 5:00-5:45 P.M.** **Question-Answer Session on Materials Contained
in Home-Study Programs II(a) and II(b)**
(Students should be prepared to ask specific ques-
tions in preparation for the final examination.)
DR. HAROLD W. TORGERSON, Professor of Finance,
School of Business, Northwestern University.
- 7:00-8:10 P.M.** **BASIC PRINCIPLES OF SECURITIES EX-
CHANGE COMMISSION REGISTRATION
AND PUBLIC SALE OF STOCK**
EDWIN KRONFELD, Attorney at Law, Neel, Siegler
and Kronfeld, Washington, D.C.
- 8:15-10:00 P.M.** **WHERE IS THE ECONOMY HEADED?**
DR. ARTHUR R. UPGREN, Frederick R. Bigelow
Professor of Economics and Director of Bureau
of Economic Studies, Macalester College, Saint
Paul, Minnesota.

Tuesday, July 1, 1969

8:30-8:50 A.M.

INDIVIDUAL REVIEW FOR WRITTEN EXAMINATION COVERING HOME-STUDY PROGRAMS II(a) and II(b)
WRITTEN EXAMINATION

9:00-10:30 A.M.

StrawnHall

10:45-11:45 A.M.

(Covering Home-Study Programs II(a) and II(b))
LOCATING AND DEVELOPING NEW SOURCES OF MORTGAGE INVESTMENT MONEY (Including Pension and Welfare Funds)
EVERETT MATTSON, Senior Executive Vice President, Lomas & Nettleton, West, Inc., Houston, Texas.

1:00-1:45 P.M.

THE SIGNIFICANCE OF TAXATION IN INCOME PROPERTY FINANCE

JOHN J. O'DONNELL, JR., General Counsel, The First Realty Co. of Boston, Inc., Boston, Massachusetts

2:00-5:15 P.M.

STUDENT ELECTIVE SESSIONS

(This afternoon session provides lectures, with adequate time for student questions, on a variety of property types which are not ordinarily handled by all mortgage banking firms. Each subject will be discussed in two separate sections during the afternoon. Students are to select for attendance from Sections A, B, C, D, and E below, one subject for each of the two afternoon sessions. For example, one student may elect to attend the session on "Apartments" from 2:00-3:30 P.M. and the session on "Motels and Hotels" from 3:45-5:15 P.M., while another student may elect to attend the session on "Miscellaneous Structures" from 2:00-3:30 P.M. and the session on "Industrial Property and Warehouses" from 3:45-5:15 P.M. No student should attend the same session during both times. Schedules for these meetings are as follows):

BUILDINGS, MOTELS & HOTELS, APARTMENTS, INDUSTRIAL PROPERTY AND WAREHOUSES AND MISCELLANEOUS STRUCTURES

Subject

A. Office Buildings

Lecturer and Room No.

ROBERT R. KIRKPATRICK, Assistant Vice President, American National Insurance Company, Galveston, Texas.

8th Floor Lounge—Abbott Hall

B. Motels & Hotels

W. RICHARD BLAGDON, Vice President and Treasurer, Howard S. Bissell, Inc., Cleveland, Ohio
12th Floor Lounge—Abbott Hall

C. Apartments

HAROLD F. ENRIGHT, M.A.I., C.R.E. Appraisal Associates, Inc., Chicago, Illinois.
11th Floor Lounge—Abbott Hall

D. Industrial
Properties &
Warehouses

BENJAMIN B. COHEN, President, B. B. Cohen &
Company, Chicago, Illinois.
7th Floor Lounge—Abbott Hall

E. Miscellaneous
Structures

Theatres and Recreational Facilities, Motor Ter-
minals, Automotive Service Stations, Fraternity
Houses, Garages, Medical Centers, Parking Lots,
Conventional and Drive-In Theatres, Golf
Courses, Mobile Home Parks, Bowling Alleys,
Boating Facilities, Nursing Homes, Produce
Warehouses, and Other Miscellaneous Structures.

LAURENCE H. CLELAND, Senior Vice President,
Manager, Mortgage Loan Department, Baird &
Warner, Inc., Chicago, Illinois.
6th Floor Lounge—Abbott Hall

7:00-8:50 P.M.

**LEGISLATION—A VITAL INGREDIENT
IN YOUR BUSINESS**

GRAHAM T. NORTHUP, Director of Governmental
Relations, Mortgage Bankers Association of
America.

Wednesday, July 2, 1969

8:30-10:30 A.M.

BANKING THE MORTGAGE BANKER

A. Credit Evaluation of the Mortgage Banker
B. Collateral Lines of Warehousing
KING UPTON, Vice President, The First National
Bank of Boston, Boston, Massachusetts.

10:45-11:45 A.M.

**TRENDS IN THE MUTUAL SAVINGS
BANKS**

(Current savings patterns, investment trends, new
developments, etc.)

DR. GEORGE HANC, Director of Research, Na-
tional Association of Mutual Savings Banks,
New York, New York.

1:00-1:50 P.M.

**CURRENT ROLE AND STATUS OF
COMMERCIAL BANKS IN MORTGAGE
FINANCE**

ROBERT S. IRVING, Vice President, The First
Pennsylvania Banking and Trust Company,
Philadelphia, Pennsylvania.

- 2:00-2:45 P.M.** **BANKING THE MORTGAGE BANKER**
(continued)

Construction Financing
KING UPTON
- 3:00-3:40 P.M.** **THE SIGNIFICANCE OF SOUND PUBLIC**
RELATIONS AND ADVERTISING PRAC-
TICES

PAISLEY BONEY, III, Vice President, Stockton,
Whately, Davin & Company, Jacksonville,
Florida.
- 3:45-5:30 P.M.** **AFTER-TAX CASH FLOW SIMULATION**
OF INVESTMENT REAL ESTATE BY COM-
PUTER

✓ PROF. JAMES A. GRAASKAMP, Graduate School of
Business, The University of Wisconsin, Madison,
Wisconsin.
- 7:00-7:45 P.M.** **THE STATE OF THE NATION—**
ECONOMICALLY SPEAKING

JOHN WETMORE, Director of Research, Mortgage
Bankers Association of America.
- 8:00 P.M.** **THE ANATOMY OF A HEADACHE**

STEPHEN G. COHN, Chairman of the Board and
President, Greenebaum Mortgage Company,
Chicago, Illinois.

CLAUDE B. HURLBUT, Hurlbut & Holder, Lub-
bock, Texas.

Thursday, July 3, 1969

- 8:30-9:45 A.M.** **PLACING IN PROPER PERSPECTIVE THE**
Strawn Hall **STATUS OF HUD, FHA, VA, FNMA, CON-**
VENTIONAL LENDING, DIRECT LEND-
ING, SECOND MORTGAGE FINANCING,
AND OTHER VEHICLES IN TODAY'S
MORTGAGE FINANCING ACTIVITIES

JEROME L. HOWARD, President, Mortgage and
Trust, Inc., Houston, Texas.

- 10:00-10:45 A.M.** **OPPORTUNITIES ABOUND IN THE UNUSUAL AND THE MISCELLANY**
 CHARLES P. LANDT, President, Cameron-Brown Company, Raleigh, North Carolina.
- 11:00-11:45 A.M.** **ATTRIBUTES OF A GOOD MORTGAGE BANKING EXECUTIVE**
 GEORGE H. DOVENMUEHLE, Chairman of the Board, Dovenmuehle, Inc., Chicago, Illinois.
- 1:00-1:40 P.M.** **CAPITAL REQUIREMENTS, BRANCH OFFICE OPERATIONS, AND EQUATING COMPANY NEEDS**
 THOMAS E. KLINGNER, Executive Vice President, The Galbreath Mortgage Company, Columbus, Ohio
- 1:45-2:30 P.M.** **REALITIES OF COMPETITION AND RELATIONS WITH INVESTORS**
 JEROME L. HOWARD
- 3:00-4:30 P.M.** **WRITTEN EXAMINATION**
 (Covering Monday-Thursday Sessions)

Friday, July 4, 1969

- 8:30-9:45 A.M.** **RECENT DEVELOPMENTS AND OUT-LOOK FOR MONEY AND CAPITAL MARKETS**
 Strawn Hall
 DR. HAROLD W. TORGERSON
- 10:00 A.M.-4:00 P.M.** **STUDENT STUDY GROUPS**
 (12 Noon-1:00 P.M. Luncheon)
 (Each student will be assigned to a specific study group with a designated student leader. Groups will be small, and specific questions will be provided for group study.)
- | Group | Students with Last names beginning | <i>Discussion Leaders and Room No.</i> |
|-------|------------------------------------|---|
| 1 | A-B | Leader to Be Assigned
7th Floor Lounge—Abbott Hall |

Group	Students with Last names beginning	Discussion Leaders and Room No.
2	C-D	Leader to Be Assigned Room 205—Abbott Hall
3	E-F	Leader to Be Assigned 11th Floor Lounge—Abbott Hall
4	G-H	Leader to Be Assigned Room 204—Abbott Hall
5	I-J	Leader to Be Assigned 8th Floor Lounge—Abbott Hall
6	K-L	Leader to Be Assigned 6th Floor Lounge—Abbott Hall
7	M-O	Leader to Be Assigned Room 202—Abbott Hall
8	P-R	Leader to Be Assigned 13th Floor Lounge—Abbott Hall
9	S-T	Leader to Be Assigned Room 203—Abbott Hall
10	U-Z	Leader to Be Assigned 12th Floor Lounge—Abbott Hall

Saturday, July 5, 1969

9:00-9:45 A.M.	DESERVING OUR ROLE IN REAL ESTATE FINANCE ROBERT H. PEASE
10:00-11:00 A.M.	TO BE ANNOUNCED (Cora Street, USA, etc.)
12:00 M.	GRADUATION RECEPTION—DRAKE HOTEL French Room
12:30 P.M.	GRADUATION LUNCHEON AND CEREMONY Grand Ballroom. (Note: Graduates should arrange outgoing transportation not necessitating departure from luncheon prior to 3:30 P.M.)

Mortgage Bankers Association OF AMERICA

EXECUTIVE OFFICE

(202) 298-8220



1707 H STREET, N.W. • WASHINGTON, D. C. 20006

April 17, 1969

Prof. James A. Graaskamp
Assistant Professor of Business
Graduate School of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 57306

Dear Jim:

Your willingness to participate in the School of Mortgage Banking this summer gives me every assurance for its success.

We will be sending to you a marked program copy indicating the time of your specific participation. Meanwhile, notebook materials used in similar courses last year are enclosed for use in designing your class materials.

Accordingly, we should be most grateful to have from you not later than the date(s) indicated below, the (revised) topical outline(s) for your session(s), and any exhibit material which should be included in the study manual.

Course III - Northwestern - June 9, 1969

In the interest of updating student notebooks, would you please send me also, by the date(s) above, if easily available, a recent photograph and a current biographical sketch.

Again, we are grateful to you for agreeing to serve as a member of the faculty for this most vital educational activity. It certainly would not be possible without your generous assistance.

Sincerely,

A handwritten signature in dark ink, appearing to read "L. Kerwood", written over a light-colored background.

Lewis O. Kerwood
Director of Education
and Training

LOK/jmw
Enclosures

School of Mortgage Banking, Course III
Northwestern University

Mortgage-Equity and After-Tax Real Estate Investment Analysis
Part II

Presented by
Professor James A. Graaskamp
University of Wisconsin, School of Business

- I. Cash flow simulation of a real estate investment opportunity.
 - A. The fallacy of normalized income.
 - B. Four sources of spendable cash.
 1. Operating revenue.
 2. Capital gains.
 3. Refinancing surplus.
 4. Tax savings on other income.
 - C. The problem of measuring yield
 1. On-going yield and opportunity costs.
 2. Retrospective analysis of yield.
 3. Discounting versus modern internal rate of return analysis.
 - D. Flow chart of model components.
 - II. Actual analysis of an apartment house investment.
 - A. Case facts
 - B. Communication with the computer.
 1. Cards & tape inputs.
 2. Office terminal inputs.
 3. Economics of computer use.
 - C. Format of computer communications to analyst.
 - D. Definition of terms.
 - III. Applications of a simulation model.
 - A. Design analysis.
 - B. Purchase offer analysis.
 - C. Mortgage loan application analysis.
 - D. Government policy analysis.
 - E. Application to valuation theory.
 - F. Inversion and computation of required rent.
 - IV. Other appraisal applications of the computer.
 - A. SRA data bank of sales.
 - B. Computerized assessment systems based on cost of replacement.
 - C. Computerized appraisal of residential property directly from sales data.
 - D. Computerized techniques for analysis of consumer markets.
 - E. Simulation of regional economic growth potentials.
 - F. Simulation of a single real estate investment potential.
- J. A. Graaskamp

UNIVERSITY OF WISCONSIN
Real Estate Investment Teaching Model
Demonstration Case Study #2

ANALYSIS FOR PURCHASE OF APARTMENT HOUSE INVESTMENT

1. Assume you wish to analyze the investment value at alternative purchase prices of a 24 unit apartment building, located at 2575 University Avenue, Madison, Wisconsin. The building has twelve two-bedroom apartments that each rent furnished for \$140 per month and twelve one-bedroom apartments that rent each for \$125 per month. The building is five years old, unfurnished, in need of maintenance and available as is for about \$225,000.
2. The building is well located and vacant land in the area is selling for about \$1700 per unit. This means that \$40,000 of the purchase price could be designated as land value. In addition to the land and building, the purchase price could be allocated to include \$12,500 for the elevator and \$7,200 to the parking stalls.
3. Market analysis indicates that the building would rent very well if all the units were carpeted and furnished. For this work it is estimated that it would cost \$600 per two-bedroom unit and \$500 for each one-bedroom unit or a total investment of \$13,200 by the prospective buyer.
4. The total capital expenditures could be allocated for depreciation purposes as follows, keeping in mind that the prospect would be a second user and therefore only entitled to a maximum of 125% declining balance except for his new investment in furnishing. The percent depreciable and the number of years of remaining useful life are reasonable estimates given some knowledge of the practices of the Internal Revenue Service and the condition of the building:

Land	\$40,000				no depreciation allowed
Parking	7,200	50%	10 yrs.	125%	
Elevator	12,500	90%	12 yrs.	125%	
Building	165,300	100%	35 yrs.	125%	
Furnishings	13,200	100%	7 yrs.		sum of digits
Transaction costs	1,800	100%	35 yrs.	125%	

5. After completion of repairs and refurbishing it is anticipated that the two-bedroom apartments will rent for \$170 a month and the one-bedrooms \$150 per month. The gross rent roll of the building would then be:

$$\$170 \times 12 \times 12 = 24,480$$

$$\$150 \times 12 \times 12 = 21,600$$

$$\underline{\quad\quad\quad} \$ 46,080$$

6. During the first year of changeover in ownership, refurbishing and re-leasing you estimate that each unit will be vacant about two months, that is about one-sixth of the time, (i.e. a vacancy of 17%) so that your average occupancy will

APARTMENT CASE STUDY #2

be 83% of potential for the first year. Thereafter you anticipate a normal vacancy rate of 5%, or an occupancy of 95%. Thus first year extra expenses include an additional 12% of future gross for rental losses.

7. The current real estate and personal property taxes to be paid in the first year following purchase are estimated to be \$9,000. The normal current operating expenses, excluding real estate taxes but including management fees, are determined to be \$8,400.
8. The property has been poorly maintained and will require additional expenditures of \$2100 in the first year to justify the new rent schedule. This deferred maintenance charge will be added to the extra operating expenses of the first year washing it out as a tax deductible expense.
9. The buyer is considering this property because his accountant suggested that with his 30% tax bracket, including state and federal taxes, he should look for some tax shelter to offset some of his other current income. Using the accelerated method of depreciation, this real estate project should satisfy this requirement.
10. The investor feels that while the normal ratio of market value to income in his community ranges between 8% and 11%, proper financing should raise the pre-tax yield on his cash equity to at least 18%. The accountant suggests that if the investor considers the cash saved on deferred income taxes due to depreciation, the investor should seek at least 18% to 22% on his investment annually on an after-tax basis. His opportunity cost is 12% as that is his common stock return including capital gains.
11. The financing available to the investor would initially combine the assumption of a first mortgage with a balance of \$180,000 with 240 months to run and a second mortgage taken back by the seller to be repaid in ten years, in monthly payments. The investor would plan to refinance both loans at the end of the sixth year of ownership when the prepayment penalty would lapse on the first mortgage. The seller feels he should receive \$1000 as points on the second mortgage since that is the discount he will take when he sells the note.

1st Mortgage	180,000	20 year	7 3/4%	
		5 year balloon		
Private loan	15,000	10 year	8 1/2%	\$1000 discount
		5 year balloon		

12. While the seller will pay for title insurance, a survey, and related items the buyer expects to pay about \$800 in professional appraisal and legal fees related to this transaction. These fees plus points in #11 equal transaction costs of \$1800 which increase original cash required and must be amortized over life of structure.
13. Temporary cash deficits at the end of any month can be covered with bank notes at a rate of 9% per annum and repaid out of positive cash flows when available.

APARTMENT CASE STUDY #2

14. The financial plan is to maintain a highly leveraged position and therefore payoff the original loans at the end of the fifth year by obtaining a new mortgage. To discover some measure of influence of such refinancing on yield to equity and cash flows, the investor will assume that in five years the best loan he could obtain would equal \$190,000 for 20 year term at 8% interest. The age of the building at that time would require granting a bonus interest feature equal to 4% of gross rent as of the beginning of sixth year when the loan begins.

COMPONENTS	PCT. DEPR	BEGIN USE	USEFUL LIFE	DEPR METHOD	COST					
LAND	.00	1	.	0	\$ 40000.	GROSS RENT	\$ 46080.	RATE OF GROWTH OF GROSS RENT	.0200	
BUILDING	1.00	1	35.	3	\$ 165300.	EXPENSES	\$ 8400.	RATE OF GROWTH OF EXPENSES	.0200	
ELEVATOR	.80	1	9.	3	\$ 12500.	R E TAXES	\$ 9000.	RATE OF GROWTH OF R E TAXES	.0500	
FURNISHINGS	1.00	1	7.	5	\$ 13200.	INCOME TAX RATE	.3000	RATE OF GROWTH OF PROJECT VALUE	.0100	
PARKING	.50	1	10.	3	\$ 7200.	VACANCY RATE	.0500	WORKING CAPITAL LOAN RATE	.0900	
TRANSACTION COST	1.00	1	35.	3	\$ 1800.	EQUITY DISCOUNT RATE	.1800	EXTRAORDINARY EXPENSES	\$ 7625.	
7TH YR REFURBISH	1.00	8	7.	1	\$ 10000.	STAGING YR(0),FACTOR	.00	COST OF EQUITY CAPITAL	.1200	
TOTAL INITIAL INVESTMENT					\$ 240000.					

	1	2	3	4	5	6	7	8	9	10
CASH EQUITY REQUIRED	45000.	45000.	45000.	45000.	45000.	50000.	50000.	50000.	50000.	50000.

FINANCING PLAN

FIRST ASSUMED MORTG \$ 180000.											
	1	2	3	4	5	6	7	8	9	10	
MONTHLY PAYMENT \$	1477.										
INTEREST RATE	.0775										
STARTS	1										
ENDS	5										
BONUS INTEREST .0000											
OF GROSS RENT											
PRINCIPAL	3919.	4234.	4574.	4942.	5339.	.	.	.	.	.
INTEREST	13812.	13497.	13157.	12790.	12393.	.	.	.	.	.
BALANCE	176080.	171845.	167270.	162328.	156989.	.	.	.	.	.

SELLERS 2ND MORTG. \$ 15000.											
	1	2	3	4	5	6	7	8	9	10	
MONTHLY PAYMENT \$	185.										
INTEREST RATE	.0850										
STARTS	1										
ENDS	5										
BONUS INTEREST .0000											
OF GROSS RENT											
PRINCIPAL	994.	1082.	1178.	1282.	1396.	.	.	.	.	.
INTEREST	1236.	1148.	1053.	948.	835.	.	.	.	.	.
BALANCE	14005.	12922.	11743.	10460.	9064.	.	.	.	.	.

REFINANCED FIRST \$ 190000.											
	1	2	3	4	5	6	7	8	9	10	
MONTHLY PAYMENT \$	1589.										
INTEREST RATE	.0800										
STARTS	6										
ENDS	10										
BONUS INTEREST .0400											
OF GROSS RENT											
PRINCIPAL	.	.	.	.	.	4016.	4349.	4710.	5101.	5524.
INTEREST	.	.	.	.	.	15054.	14721.	14360.	13969.	13546.
BALANCE	.	.	.	.	.	185983.	181634.	176924.	171822.	166297.

REFURBISH CHATTEL \$ 10000.											
	1	2	3	4	5	6	7	8	9	10	
MONTHLY PAYMENT \$	150.										
INTEREST RATE	.0900										
STARTS	8										
ENDS	10										
BONUS INTEREST .0000											
OF GROSS RENT											
PRINCIPAL	.	.	.	.	.	.	.	938.	1026.	1122.
INTEREST	.	.	.	.	.	.	.	861.	773.	677.
BALANCE	.	.	.	.	.	.	.	9061.	8035.	6913.

	1	2	3	4	5	6	7	8	9	10
GROSS RENT	46080.	47001.	47923.	48844.	49766.	50688.	51609.	52531.	53452.	54374.
LESS VACANCY ALLOWANCE	2304.	2350.	2396.	2442.	2488.	2534.	2580.	2626.	2672.	2718.
EFFECTIVE GROSS INCOME	43776.	44651.	45527.	46402.	47278.	48153.	49029.	49904.	50780.	51655.
LESS REAL ESTATE TAXES	9000.	9450.	9900.	10350.	10800.	11250.	11700.	12150.	12600.	13050.
LESS EXPENSES	16025.	8568.	8736.	8904.	9072.	9240.	9408.	9576.	9744.	9912.
NET INCOME	18751.	26633.	26891.	27148.	27406.	27663.	27921.	28178.	28436.	28693.
LESS DEPRECIATION	11578.	10038.	8847.	7913.	7169.	6565.	6067.	7790.	7178.	6223.
LESS INTEREST	15049.	14646.	14210.	13739.	13229.	17082.	16785.	17323.	16881.	16398.
TAXABLE INCOME	-7876.	1948.	3832.	5495.	7007.	4015.	5068.	3064.	4375.	6071.
PLUS DEPRECIATION	11578.	10038.	8847.	7913.	7169.	6565.	6067.	7790.	7178.	6223.
LESS PRINCIPAL PAYMENTS	4914.	5317.	5753.	6224.	6735.	4016.	4349.	5648.	6127.	6647.
CASH THROW-OFF	-1213.	6669.	6926.	7184.	7441.	30510.	6785.	15206.	5427.	5647.
LESS TAXES	.	584.	1149.	1648.	2102.	1204.	1520.	919.	1312.	1821.
CASH FROM OPERATIONS	-1213.	6084.	5777.	5535.	5339.	29306.	5265.	14287.	4114.	3826.
WORKING CAPITAL LOAN(CUM BALANCE)	1213.	.	.	.	.	.	.	.	.	.
SPENDABLE CASH AFTER TAXES	.	4762.	5777.	5535.	5339.	29306.	5265.	4287.	4114.	3826.
TAX SAVINGS ON OTHER INCOME	2363.	.	.	.	.	.	.	.	.	.
* * * * *										
MARKET VALUE	240000.	242400.	244800.	247200.	249600.	252000.	254400.	266800.	269200.	271600.
BALANCE OF LOANS	191298.	184767.	179014.	172789.	166054.	185983.	181634.	185985.	179858.	173211.
NET WORTH OF PROPERTY	48701.	57632.	65785.	74410.	83545.	66016.	72765.	80814.	89341.	98388.
CAPITAL GAIN	8131.	18662.	29193.	39724.	50255.	60786.	71317.	83277.	95046.	106605.
CAPITAL GAINS TAX	1219.	2799.	4378.	5958.	7538.	9117.	10697.	12491.	14256.	15990.
INCOME TAX ON EXCESS DEPRECIATION	1034.	1606.	1821.	1756.	1467.	997.	378.	.	.	.
* * * * *										
PERCENT INITIAL EQUITY PAYBACK AFTER TAX	.0525	.1583	.2867	.4097	.5283	1.0616	1.1669	1.2527	1.3350	1.4115
NET INCOME-MARKET VALUE RATIO	.0781	.1098	.1098	.1098	.1098	.1097	.1097	.1056	.1056	.1056
RETURN ON NET WORTH BEFORE TAXES	.0552	.3203	.2616	.2403	.2227	.1553	.2050	.3195	.1726	.1644
RETURN ON NET WORTH AFTER TAXES	.0846	.2484	.2280	.2122	.1976	.1430	.1977	.1770	.1591	.1483
CASH RETURN ON ORIG CASH EQUITY REF TAX	-.0269	.1482	.1539	.1596	.1653	.6102	.1357	.3041	.1085	.1129
CASH RETURN ON ORIG CASH EQUITY AFT TAX	.0525	.1058	.1283	.1230	.1186	.5861	.1053	.0857	.0822	.0765
DEFAULT RATIO	.9763	.8333	.8054	.8029	.8004	.8204	.8185	.8508	.8484	.8461
LENDER BONUS INTEREST RATE	.0000	.0000	.0000	.0000	.0000	.0122	.0110	.0115	.0114	.0120
* * * * *										
PRESENT VALUE OF PROJECT BEFORE TAXES	236272.	241180.	244044.	246091.	247482.	246720.	247239.	254941.	254808.	254543.
PRESENT VALUE OF PROJECT AFTER TAXES	236364.	238649.	240204.	241194.	241709.	240691.	241002.	245953.	245633.	245179.
EQUITY RATE W/ COST OF CAPITAL AT .120	.0846	.1607	.1785	.1825	.1817	.1741	.1716	.1683	.1648	.1615



UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS

Real Estate Investment Teaching Model

February, 1971

Card Type 5

Gross Rent	Expenses	Rental Growth Rate	Expense Growth Rate
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65				
																							46080	8400	.0200	.0200																																										

Card Type 6

R E Taxes	R E Tax Growth Rate	Project Value Rate of Growth
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65			
																												9000	.0500	.0100																																					

Card Type 7

Vacancy Rate	Working Capital Loan Interest Rate
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65		
																																								.0500	.0900																									

To code Depreciation Method, use the following code no's.

- 0 = no depreciation
- 1 = sum of the digits
- 2 = straight line depreciation
- 3 = 125% declining balance
- 4 = 150% declining balance
- 5 = 200% declining balance

HAVE YOU CHECKED CARD 1 COLS. 61 and 64?

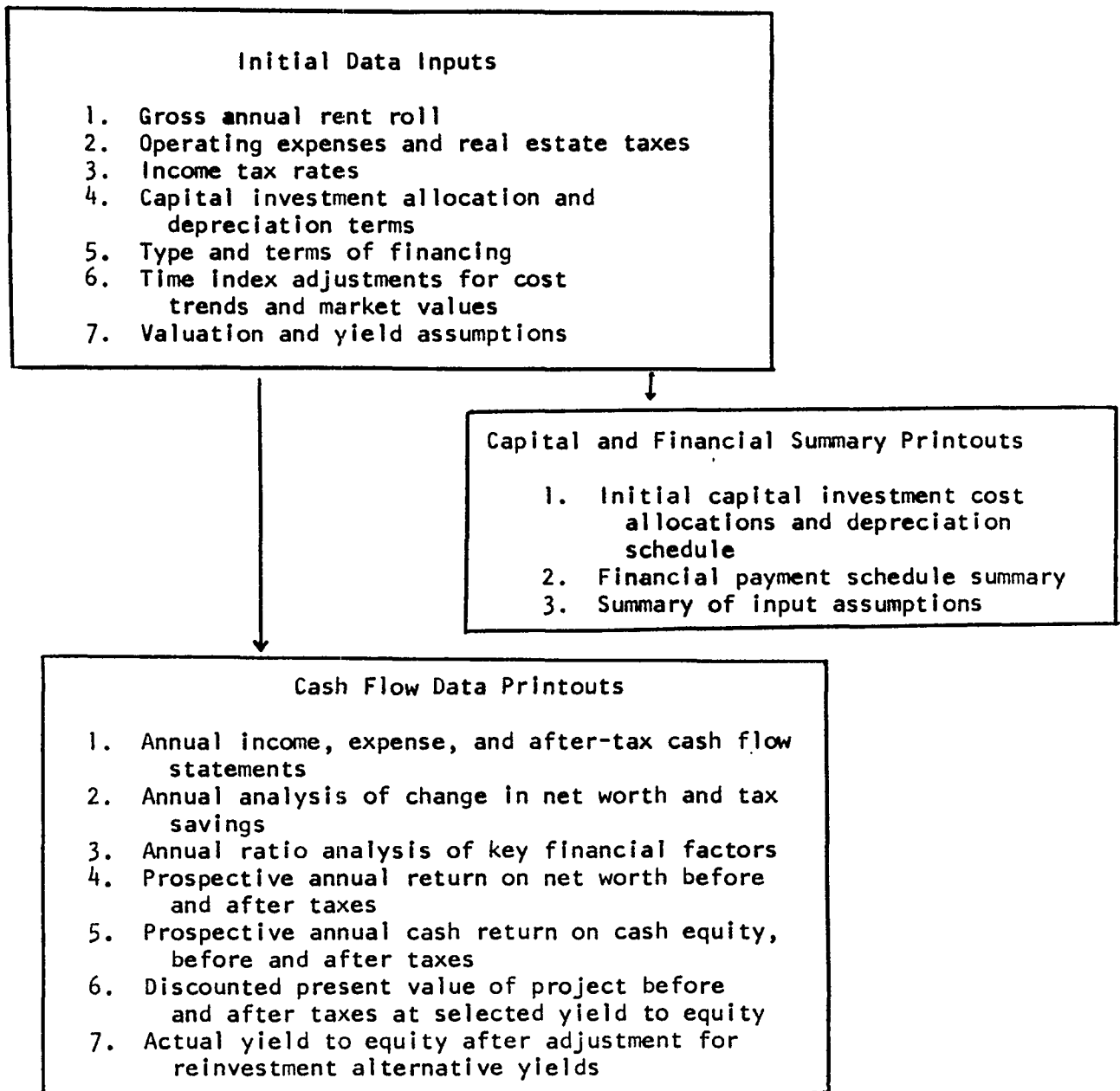


FIGURE 1: Simplified Flow Chart of Cash-Flow Investment Simulation Model

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model

Basic Definitions of Model Outputs

- 1) Current period return on Net Worth before taxes =

$$\frac{\text{Cash Throw-off} + \text{Change in Net Worth}}{\text{Net Worth at End of Previous Year}}$$

- 2) Current period return on net worth after taxes =

$$\frac{\text{Spendable cash} + \text{tax savings on other income} + \text{(Change in net worth - change in cap. gains tax)}}{\text{Net worth at the end of previous year less capital gains tax of previous year}}$$

- 3) Cash return on original cash equity before taxes =

$$\frac{\text{Cash throw-off}}{\text{Total initial investment less initial mortgage debt}} \\ \text{(This is adjusted for staged projects)}$$

- 4) Cash return on original equity cash after taxes =
(This is adjusted for staged projects)

$$\frac{\text{Spendable Cash after taxes} + \text{Tax savings on other income}}{\text{Total initial investment cost less initial mtge. debt}}$$

- 5) Net income - market value ratio

$$\frac{\text{Net Income}}{\text{Market Value for the same period}}$$

- 6) After tax cash recovered - cash equity ratio (payback) =

$$\frac{\text{Accumulated spendable cash after taxes} + \text{accumulated tax savings other income}}{\text{Cash equity required}}$$

- 7) Default ratio =

$$\frac{\text{Operating Exp.} + \text{R.E. Taxes} + \text{Prin. \& Interest on Mtge.} + \text{Working Cap. Loan Prin. Repayment}}{\text{Gross Income}}$$

8) Lender Bonus Interest Rate =

$$\frac{\% \text{ of effective gross (not to exceed cash throw-off for period)}}{\text{Balance due on loan at beginning of period}}$$

9) Resale Market Value at End of Year

$$\text{Total Initial Investment Cost} + \text{Additional Staged Investment} \times \text{Index for Year}$$

10) Net worth of property =

$$\text{Market value less balance of loans less working capital loans}$$

11) A. Sales proceeds subject to capital gains tax =

$$\text{Market value} - (\text{Total Capital Investment} - \text{Straight-line depreciation} - \text{Allowed excess depreciation})$$

B. Sales proceeds subject to income tax =

$$\text{Cumulative depreciation taken} - \text{Straight-line depreciation} - \text{Allowed excess depreciation}$$

$$\text{C. Taxes on sale} = (\text{A} \times 1/2 \text{ Income Tax rate}^*) + (\text{B} \times \text{Income Tax Rate})$$

* Not to exceed 25%

12) Present value of project before taxes =

$$\text{Original mortgage balance} + \text{PV of received stream of cash throw-off} + \text{PV of net worth if sold at end of year indicated by column number.}$$

13) Present value of project after taxes =

$$\text{Original mortgage balance} + \text{present value of received stream of spendable cash after taxes} + \text{PV of received tax savings on other income} + \text{PV of (net worth less capital gains tax) if sold at end of year indicated by column number.}$$

14) Cash Equity Required = \sum \$ components utilized -

$$\sum \text{face value of mortgages in force}$$

15) For each year N (net worth - cap gains tax) +

$$X = \sum \sum^N [(\text{Spendable Cash Aft Taxes} + \text{Tax Savings}) * (1. + \text{Cost of Equity Cap})^{N-1}]$$

$$Y = (\text{LOG}(X) - \text{LOG}(\text{Original Investment})) / N$$

$$\text{Equity Rate} = \text{Exp}(Y) - 1.$$

SUMMARY OF INPUTS

NAME	PRICE PER UNIT	LAND COVERED	TYPE	YEAR	ANNUAL PERCENTAGE INDEXES (A)			
					LAND	R.E. TAXES	CAPITAL COSTS	CASH
10FT 1/2 SURF RD	4.00	20.00	2	1	100.	100.	100.	90.
SECOND REC BLD	35000.00	1.00	1	2	101.	120.	105.	80.
ELECT TO SITE	200.00	.00	0	3	102.	123.	110.	70.
CLUB HOUSE	10000.00	25.00	1	4	103.	124.	115.	60.
I-U POOL	75000.00	1.00	1	5	104.	126.	120.	.
AREA SWM POOL	15000.00	1000.00	2	6	105.	128.	125.	.
AREA UTIL BLDG	9000.00	1000.00	2	7	106.	130.	130.	.
ENTRANCES + SIGNS	30000.00	80000.00	2	8	107.	132.	135.	.
1KF OF 40FTW TRL	1.00	40.00	2	9	108.	134.	140.	.
STABLE	10000.00	4.00	1	10	109.	136.	145.	.
SKEET + RIF RANG	5000.00	1.00	1					
DOCKS + LANDINGS	10000.00	.50	1					
REC EQUIP	25.00	.00	0					
MGR HOUSE	20000.00	.50	1					
.1 CLUSTERSEPTIC	500.00	.00	0					
WATER WELL	2100.00	.00	0					
MAINT FACILITIES	10000.00	2.00	1					
RES BLDG COST SF	15.00	.00	0					
WILDERNESS LAND	100.00	2120.00	1					
AREA 1 DREDGING	18000.00	.00	0					
AREA 2 DREDGING	30000.00	.00	0					
CONTINGENCIES	200.00	.00	0					
HIKING TRAIL	2000.00	15740.00	2					
WATER LINE	250.00	1.00	0					

TYPE CODES
 0=NO LAND COVERED
 1=LAND COVERED IN ACRES
 2=LAND COVERED IN SQUARE FEET

MARGINAL TAX RATE	.4800	D CARRYING COST PER RAW ACRE OF LAND	1.00
WORKING CAPITAL INTEREST RATE	.1500	EQUITY RATE OF RETURN--USED IN PRESENT VALUE CALCULATIONS	20.00
REAL ESTATE TAX EQUALIZATION RATE	33.00	PORTFOLIO RATE OF RETURN--OR OPPORTUNITY COST	12.00
REAL ESTATE TAXES PER THOUSAND OF VALUE	90.00	FIXED ADMINISTRATIVE + GENERAL EXPENSES PER YEAR	75000.
PRORATION FORMULA O/O TO LAND AREA	.00	ADMIN. + GENERAL EXPENSES AS A O/O OF SALES VALUE	15.00
PRORATION FORMULA O/O TO SALES VALUE	100.00	ADMIN. + GENERAL EXPENSES AS A O/O OF CAPITAL EXPENDITURES	10.00

COSTS OF GENERAL IMPROVEMENTS A	1	2	3	4	5	6	7	8	9	10
10FT 1/2 SURF RD	280000.	73500.	77000.	80500.	.	.	.	.	.	.
SECOND REC BLD	.	.	38500.	.	.	.	.	.	.	.
CLUB HOUSE	100000.	.	.	.	.	.	.	.	.	.
I-O POOL	.	.	.	.	.	.	.	.	.	.
AREA SWM POOL	30000.	.	.	.	.	.	.	.	.	.
AREA UTIL BLDG	18000.	.	.	.	.	.	.	.	.	.
ENTRANCES + SGNS	30000.	.	.	.	.	.	.	.	.	.
IRF OF 40FTW TRL	42240.	44352.	.	.	.	.	.	.	.	.
STABLE	10000.	.	.	.	.	.	.	.	.	.
SKEET + RIF RANG	5000.	.	.	.	.	.	.	.	.	.
DOCKS + LANDINGS	20000.	.	.	.	.	.	.	.	.	.
MGR HOUSE	20000.	.	.	.	.	.	.	.	.	.
WATER WELL	6300.	.	.	.	.	.	.	.	.	.
MAINT FACILITIES	10000.	.	.	.	.	.	.	.	.	.
WILDNERNESS LAND	100.	.	.	.	.	.	.	.	.	.
AREA 1 DREDGING	18000.	.	.	.	.	.	.	.	.	.
AREA 2 DREDGING	.	.	33000.	.	.	.	.	.	.	.
HIKING TRAIL	16000.	.	17600.	.	.	.	.	.	.	.
TOTAL	680640.	117852.	166100.	80500.	.	.	.	.	.	.

ACRES DEDICATED A	1	2	3	4	5	6	7	8	9	10
GENERAL USE										
10FT 1/2 SURF RD	32.13	8.03	8.03	8.03	.00	.00	.00	.00	.00	.00
SECOND REC BLD	.00	.00	1.00	.00	.00	.00	.00	.00	.00	.00
CLUB HOUSE	25.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
I-O POOL	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AREA SWM POOL	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
AREA UTIL BLDG	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
ENTRANCES + SGNS	1.83	.00	.00	.00	.00	.00	.00	.00	.00	.00
IRF OF 40FTW TRL	38.78	38.78	.00	.00	.00	.00	.00	.00	.00	.00
STABLE	4.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
SKEET + RIF RANG	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
DOCKS + LANDINGS	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MGR HOUSE	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAINT FACILITIES	2.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
WILDNERNESS LAND	2120.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
HIKING TRAIL	2.89	.00	2.89	.00	.00	.00	.00	.00	.00	.00
SPECIFIC USE										
10FT 1/2 SURF RD	.00	16.98	16.98	16.98	16.98	8.26	.00	.00	.00	.00
IRF OF 40FTW TRL	.00	15.15	15.15	15.15	15.15	8.26	.00	.00	.00	.00
TOTAL	2230.24	78.96	44.06	40.17	32.13	16.52	.00	.00	.00	.00

B	
INITIAL RAW LAND AVAILABLE--	3300.00 ACRES
LAND FOR .5AC LOTS W/UTIL	450.00
LAND FOR 1AC LOT W/O UTIL	400.00
LAND FOR STUDIO CONDO LUX	4.00
LAND FOR 2 BR CONDOMINIUM	4.00
LAND DEDICATED	2442.08
LAND LEFT FOR OPEN SPACE	-.00

.5AC LOTS W/UTIL

SUMMARY OF INPUTS

	(B)	YEAR	SALES PRICE (A)	NO. UNITS SOLD
LOT SIZE--SQUARE FEET	21780.	1	8000.	.
LOT SIZE--ACRES	.50	2	8000.	180.
PERCENT SOLD FOR CASH EACH YEAR	100.00	3	8400.	180.
O/D DOWN REQUIRED ON LAND CONTRACT SALES	.00	4	8400.	180.
INTEREST RATE ON LAND CONTRACT SALES	.00	5	8800.	180.
TERM IN YEARS ON LAND CONTRACT SALES	.00	6	8800.	180.
CARRYING COST PER UNIT OF SALES INVENTORY	100.00 (D)	7	.	.
SALES COMMISSIONS O/D OF SALES PRICE	15.00	8	.	.
CLOSING COSTS PER UNIT	425.00	9	.	.
CAPITAL COST PER UNIT	1625.00	10	.	.

DEVELOPMENT PERIOD	1	2	3	4	5	6	7	8	9	10
BEGINNING INVENTORY (B)	.	.	45.	45.	45.	45.	.	.	.	.
PRODUCTION STARTS	225.	180.	180.	180.	135.	.	.	.	.	.
PRODUCTION COMPLETIONS	.	225.	180.	180.	180.	135.	.	.	.	.
SALES IN UNITS	.	180.	180.	180.	180.	180.	.	.	.	.
UNITS SOLD FOR CASH	.	180.	180.	180.	180.	180.	.	.	.	.
PRICE PER UNIT	8000.	8000.	8400.	8400.	8800.	8800.	.	.	.	.
REVENUE FROM CASH SALES	.	1440000.	1512000.	1512000.	1584000.	1584000.	.	.	.	.
UNITS SOLD ON LAND CONTRACTS	.	.	.	.	.	.	.	.	.	.
DOWN PAYMENT RECEIVED	.	.	.	.	.	.	.	.	.	.
ACCOUNTS RECEIVABLE ADDED	.	.	.	.	.	.	.	.	.	.
SALES COSTS	.	.	.	.	.	.	.	.	.	.
COMMISSIONS PAID	.	210000.	226800.	226300.	237000.	237600.	.	.	.	.
CLOSING COSTS	.	76500.	76500.	76500.	76500.	76500.	.	.	.	.
NET CASH GENERATED FROM SALES	-.	1147500.	1208700.	1208700.	1269900.	1269900.	-.	-.	-.	-.
RUNOFF OF LAND CONTRACT SALES	.	.	.	.	.	.	.	.	.	.
INTEREST	.	.	.	.	.	.	.	.	.	.
PRINCIPAL	.	.	.	.	.	.	.	.	.	.
PERIOD END ACCOUNTS RECEIVABLE	.	.	.	.	.	.	.	.	.	.
REAL ESTATE TAXES ON INVENTORY	.	5346.	11226.	11226.	11761.	5880.	.	.	.	.
CARRYING COST OF INVENTORY	.	2250.	4500.	4500.	4500.	2250.	.	.	.	.
CAPITAL COST OF IMPROVEMENTS (C)	365625.	307125.	321750.	336375.	263250.	.	.	.	.	.
TOTAL CASH REVENUE	-365625.	832784.	871224.	856604.	990370.	1261770.	.	.	.	.

IAC LOT W/O UTIL

SUMMARY OF INPUTS

	(B)	YEAR	SALES PRICE (A)	NO. UNITS SOLD
LOT SIZE--SQUARE FEET	43560.	1	5500.	.
LOT SIZE--ACRES	1.00	2	5500.	100.
PERCENT SOLD FOR CASH EACH YEAR	100.00	3	5775.	100.
O/D DOWN REQUIRED ON LAND CONTRACT SALES	.00	4	6050.	100.
INTEREST RATE ON LAND CONTRACT SALES	.00	5	6050.	100.
TERM IN YEARS ON LAND CONTRACT SALES	.00	6	.	.
CARRYING COST PER UNIT OF SALES INVENTORY	100.00	7	.	.
SALES COMMISSIONS O/O OF SALES PRICE	15.00 (D)	8	.	.
CLOSING COSTS PER UNIT	325.00	9	.	.
CAPITAL COST PER UNIT	1100.00	10	.	.

DEVELOPMENT PERIOD	(B)	1	2	3	4	5	6	7	8	9	10
BEGINNING INVENTORY	.	.	25.	25.	25.	.	.	.	.	.	.
PRODUCTION STARTS	125.	100.	100.	75.	.	.	.	.	.	.	.
PRODUCTION COMPLETIONS	.	125.	100.	100.	75.	.	.	.	.	.	.
SALES IN UNITS	.	100.	100.	100.	100.	100.	.	.	.	.	.
UNITS SOLD FOR CASH	.	100.	100.	100.	100.	100.	.	.	.	.	.
PRICE PER UNIT	5500.	5500.	5775.	6050.	6050.	.	.	.	.	.	.
REVENUE FROM CASH SALES	.	550000.	577500.	605000.	605000.	.	.	.	.	.	.
UNITS SOLD ON LAND CONTRACTS
DOWN PAYMENT RECEIVED
ACCOUNTS RECEIVABLE ADDED
SALES COSTS
COMMISSIONS PAID	.	82500.	86625.	90750.	90750.	.	.	.	.	.	.
CLOSING COSTS	.	32500.	32500.	32500.	32500.	.	.	.	.	.	.
NET CASH GENERATED FROM SALES	.	435000.	458375.	481750.	481750.	.	.	.	.	.	.
RUNOFF OF LAND CONTRACT SALES
INTEREST
PRINCIPAL
PERIOD END ACCOUNTS RECEIVABLE
REAL ESTATE TAXES ON INVENTORY	.	2041.	4287.	4492.	2246.	.	.	.	.	.	.
CARRYING COST OF INVENTORY	.	1250.	2500.	2500.	1250.	.	.	.	.	.	.
CAPITAL COST OF IMPROVEMENTS	137500.	115000.	121000.	94875.	.	.	.	.	.	.	.
TOTAL CASH REVENUE	-137500.	316209.	350588.	379883.	478254.	.	.	.	.	.	.

STUDIO CONDO LUX

SUMMARY OF INPUTS

		YEAR	SALES PRICE (A)	NO. UNITS SOLD
LOT SIZE--SQUARE FEET	550.	1	17900.	-
LOT SIZE--ACRES	.01	2	17900.	20.
PERCENT SOLD FOR CASH EACH YEAR	100.00	3	18795.	20.
O/O DOWN REQUIRED ON LAND CONTRACT SALES	.00	4	19690.	20.
INTEREST RATE ON LAND CONTRACT SALES	.00	5	20585.	20.
TERM IN YEARS ON LAND CONTRACT SALES	.00	6	.	.
CARRYING COST PER UNIT OF SALES INVENTORY	300.00 (D)	7	.	.
SALES COMMISSIONS O/O OF SALES PRICE	15.00	8	.	.
CLOSING COSTS PER UNIT	1000.00	9	.	.
CAPITAL COST PER UNIT	9825.00	10	.	.

DEVELOPMENT PERIOD	(B) 1	2	3	4	5	6	7	8	9	10
BEGINNING INVENTORY	.	.	5.	5.	5.	.	.	.	.	.
PRODUCTION STARTS	25.	20.	20.	15.	.	.	.	.	.	.
PRODUCTION COMPLETIONS	.	25.	20.	20.	15.	.	.	.	.	.
SALES IN UNITS	.	20.	20.	20.	20.	.	.	.	.	.
UNITS SOLD FOR CASH	.	20.	20.	20.	20.	.	.	.	.	.
PRICE PER UNIT	17900.	17900.	18795.	19690.	20585.	.	.	.	.	.
REVENUE FROM CASH SALES	.	358000.	375900.	393800.	411700.	.	.	.	.	.
UNITS SOLD ON LAND CONTRACTS
DOWN PAYMENT RECEIVED
ACCOUNTS RECEIVABLE ADDED
SALES COSTS
COMMISSIONS PAID	.	53700.	56385.	59070.	61755.	.	.	.	.	.
CLOSING COSTS	.	20000.	20000.	20000.	20000.	.	.	.	.	.
NET CASH GENERATED FROM SALES	.	284300.	299515.	314730.	329945.	.	.	.	.	.
RUNOFF OF LAND CONTRACT SALES
INTEREST
PRINCIPAL
PERIOD END ACCOUNTS RECEIVABLE
REAL ESTATE TAXES ON INVENTORY	.	1329.	2791.	2923.	1528.	.	.	.	.	.
CARRYING COST OF INVENTORY	.	750.	1500.	1500.	750.	.	.	.	.	.
CAPITAL COST OF IMPROVEMENTS	245625.	206325.	216150.	169480.	.	.	.	.	.	.
TOTAL CASH REVENUE	-245625.	75896.	79074.	140827.	327667.	.	.	.	.	.

2 BR CONDOMINIUM

SUMMARY OF INPUTS

	(B)	YEAR	SALES PRICE (A)	NO. UNITS SOLD
LUT SIZE--SQUARE FEET	750.	1	22500.	.
LUT SIZE--ACRES	.01	2	22500.	20.
PERCENT SOLD FOR CASH EACH YEAR	100.00	3	23625.	20.
O/O DOWN REQUIRED ON LAND CONTRACT SALES	.00	4	24750.	20.
INTEREST RATE ON LAND CONTRACT SALES	.00	5	25875.	20.
TERM IN YEARS ON LAND CONTRACT SALES	.00	6	.	.
CARRYING COST PER UNIT OF SALES INVENTORY	300.00	7	.	.
SALES COMMISSIONS O/O OF SALES PRICE	15.00 (D)	8	.	.
CLOSING COSTS PER UNIT	1000.00	9	.	.
CAPITAL COST PER UNIT	12825.00	10	.	.

DEVELOPMENT PERIOD	(B) 1	2	3	4	5	6	7	8	9	10
BEGINNING INVENTORY	.	.	5.	5.	5.	.	.	.	.	.
PRODUCTION STARTS	25.	20.	20.	15.	.	.	.	.	.	.
PRODUCTION COMPLETIONS	.	25.	20.	20.	15.	.	.	.	.	.
SALES IN UNITS	.	20.	20.	20.	20.	.	.	.	.	.
UNITS SOLD FOR CASH	.	20.	20.	20.	20.	.	.	.	.	.
PRICE PER UNIT	22500.	22500.	23625.	24750.	25875.	.	.	.	.	.
REVENUE FROM CASH SALES	.	450000.	472500.	495000.	517500.	.	.	.	.	.
UNITS SOLD ON LAND CONTRACTS
DOWN PAYMENT RECEIVED
ACCOUNTS RECEIVABLE ADDED
SALES COSTS	.	67500.	70875.	74250.	77625.	.	.	.	.	.
COMMISSIONS PAID	.	20000.	20000.	20000.	20000.	.	.	.	.	.
CLOSING COSTS
NET CASH GENERATED FROM SALES	.	362500.	381625.	400750.	419875.	.	.	.	.	.
RUNOFF OF LAND CONTRACT SALES
INTEREST
PRINCIPAL
PERIOD END ACCOUNTS RECEIVABLE
REAL ESTATE TAXES ON INVENTORY	.	1670.	3508.	3675.	1921.	.	.	.	.	.
CARRYING COST OF INVENTORY	.	750.	1500.	1500.	750.	.	.	.	.	.
CAPITAL COST OF IMPROVEMENTS	320625.	269325.	282150.	221230.	.	.	.	.	.	.
TOTAL CASH REVENUE	-320625.	90754.	94466.	174345.	417204.	.	.	.	.	.

AGGREGATE RESULTS

DEVELOPMENT PERIOD	1	2	3	4	5	6	Total	% of sales
REVENUE FROM CASH SALES	.	2798000.	2937900.	3005800.	3116200.	1584000.	13,443,900	100%
DOWNPAYMENT RECEIVED	.	.	.	.	.	.
ACCOUNTS RECEIVABLE ADDED	.	.	.	.	.	.
SALES COSTS	.	.	.	.	.	.
COMMISSIONS PAID	.	419700.	440685.	450070.	467730.	237000.	2,016,585	15
CLOSING COSTS	.	149000.	149000.	149000.	149000.	76500.	672,500	05
RUNOFF OF LAND CONTRACT SALES	.	.	.	.	.	.
INTEREST	.	.	.	.	.	.
PRINCIPAL	.	.	.	.	.	.
PERIOD END ACCOUNTS RECEIVABLE	.	.	.	.	.	.
CASH FROM OPERATIONS	.	2229300.	2348220.	2405930.	2501470.	1269900.	10,754,820	80
LESS CASH OUTLAYS								
CARRYING COSTS--RAW LAND	1650.	.	.	.	.	.	1,650	00
CARRYING COSTS--INVENTORY	.	5000.	10000.	10000.	7250.	2250.	34,500	00
REAL ESTATE TAX--RAW LAND	6311.	.	.	.	.	.	6,311	00
REAL ESTATE TAXES--INVENTORY	.	10387.	21813.	22317.	17450.	5880.	77,853	01
MANAGEMENT + ADMIN. COSTS	175001.	521312.	551400.	541116.	494055.	237000.	2,520,484	19
NEW ALLOCATED CAPITAL OUTLAYS	1069370.	898275.	941050.	821960.	263250.	.	3,993,905	30
NEW GENERAL CAPITAL OUTLAYS	680640.	117652.	166100.	80000.	.	.	1,045,092	08
NET CASH REVENUE	-1932970.	676488.	657860.	930050.	1719470.	1024170.	3,075,068	23
PROJECT DEBT STRUCTURE								
TOTAL INITIAL BALANCE	.	.	.	.	.	.
BALANCE END OF YEAR	1750010.	1262130.	865280.	263740.	.	.		
TOTAL PRINCIPAL PAYMENTS	.	1504000.	1504000.	1504000.	526990.	.	5,038,990	37
TOTAL INTEREST PAID ON PROJ.	105000.	207422.	181013.	133550.	81556.	.	708,541	05
INTEREST ADDED TO LIAN BAL.	.	.	.	.	.	.
NET CASH FROM DEBT INCURRED	1750010.	1016120.	1107150.	902460.	263250.	.	5,038,990	37
CASH AVAILABLE BEFORE TAXES	-287960.	-18820.	80000.	194960.	1374180.	1024170.	2,366,530	18
CAPITAL COST OF IMPROVEMENTS								
PRORATED TO UNITS SOLD	.	898275.	930354.	941050.	983820.	351000.	4,104,504	31
GENERAL CAPITAL COST								
PRORATED TO UNITS SOLD	.	156181.	220327.	256309.	266412.	135336.	1,045,065	08
LAND COST PRORATED TO UNITS SOLD	.	88452.	92875.	95021.	98574.	50074.	424,996	03
TAXABLE INCOME FROM OPERATIONS	-288960.	331285.	339445.	400089.	551364.	487760.	2,114,946	16
ESTIMATED INCOME TAXES	.	159018.	162933.	194442.	264654.	234124.	1,015,171	08
TAX SAVINGS ON OTHER INCOME	138700.	.	.	.	.	.
NET CASH AFTER TAXES	-177960.	-177838.	-82933.	518.	1109530.	790050.	1,900,098	14
REINVESTED EARNINGS	.	.	.	.	.	.
WORKING CAPITAL LOAN BALANCE	177960.	355798.	438731.	438213.	.	.		
CASH AFTER TAXES FOR DIVIDENDS OR REINVESTMENT	.	.	.	.	671320.	790050.	1,461,370	11
DIVIDENDS PAID	.	.	.	.	671320.	790050.	1,461,370	11
NET AFTER TAX + DEBT REPAYMENT ON BULK SALES	-1247330.	-754872.	-464430.	-47747.	226103.	30.		
P.V. AT 20.0% OF EQUITY RETURNS	-923860.	-408630.	-164762.	92461.	476237.	649967.		
INTERNAL RATE OF RETURN							19.1%	

School of Mortgage Banking, Course III
Northwestern University, July 1, 1970

CASH FORECASTING AND AFTER-TAX REAL ESTATE INVESTMENT ANALYSIS

Presented by
Professor James A. Graaskamp, C.R.E.
University of Wisconsin, School of Business

Portions of this essay have been taken from an article which appeared in the January 1969 issue of The Appraisal Journal, "A Practical Computer Service for the Income Approach," by the author.

Although some pages appear to be missing, text follows sequentially --

COMPUTER TECHNIQUES TO AID
CASH FORECASTING AND AFTER-TAX REAL ESTATE INVESTMENT ANALYSIS

Introduction

It is widely held that the investment value of any income-producing capital asset is the present value of the net income to be generated. This has been generally true since the days of Alfred Marshall and Irving Fisher.¹

Frederick Babcock went so far as to maintain that there was only one method of valuing real estate, the discounting of building returns extended to perpetuity with capitalization rates determined in the market.² The basic concept of Income/Capitalization Rate equals Value has become a truism for income property appraisal, but the appropriate application of this concept is a matter of considerable debate when forecasting sale price.³

The purpose of this article is to suggest how an available computer service can actually apply the theory of the income approach to value to modern real estate investment counseling and appraisal assignments. Because the system relies on a combination of market rents, historical costs, and a present value discounting of returns, it is also possible to comment on the controversial need to use and correlate three approaches to value.

Redirection of income theory

Over the years the definition of Income has evolved from a simple average annual net income over the full useful life of the investment to a mixed return of periodic incomes and singular reversions, and

most recently, to a further division of returns between vested mortgage interests and equity interests.⁴ Concurrently, Capitalization Rate has evolved from a simple straight line concept to elaborate composite, Hoskold, Inwood, or Ellwood configurations. Each refinement has attempted to provide a more realistic allocation of proceeds among cash dividends, mortgage payments, and capital recapture.⁵

In these refinements concern with methodology gradually obscured original present value theory. One school of thought, with its roots in Babcock, seeks an "overall market rate" by analyzing market sales of properties producing known net incomes. However, a cap rate determined by the ratio of income to sale price is nothing more than the reciprocal of a price/earnings ratio, such as used in the stock market. A "market rate" of .085 means a price/earnings ratio of 12, a more accurate representation of market price comparisons than is possible with its cousin, the gross rent multiplier. Insurance companies and banks frequently determine loan value basis as some multiple of a normalized or average net income expectation. For smaller income properties the market may well operate on net income multipliers.⁶ A multiplier is a market comparison approach and not specifically a present value factor, however.

Another approach to cap rate, such as the Ellwood method present value annuity, would construct a factor as a function of loan ratio, interest rate, mortgage term, equity yield, and depreciation. A single composite discount rate requires that Income in the present value equation be constant at an average figure. Any leveling or averaging of income to achieve conformity with the single variable truism $I/C = V$ does

violence to the proposition that present dollars are worth more than future dollars and avoids the need to place returns to investor in specific time periods. All of the scholarly concern with the Capitalization Rate misses the point that the income received by the investor is uneven and erratic in amount and of differing investment quality due to varying degrees of penetration in income taxes on these receipts. Nonetheless, the income schedule, not the capitalization rate, is the root of all value.

Therefore, the basic proposition of this essay is that, if the income approach to value is to be salvaged as an appraisal tool, then attention must be redirected to the problems of:

1. Redefinition of the income returns to the investor.
2. Placement of returns in specific periods of time.
3. Accounting for each type of return to reflect exposure to income tax confiscation.
4. Reliance on simple, compound-interest, reversion discounts only rather than all-encompassing fictional annuity factors.
5. Redirection of appraisal methodology to reflect investor logic and motivation.

Redefinition of income returns

It must be recognized by now that the productivity of any real estate investment is not only shared between mortgage and equity interests but is also distributed among local governments via real estate taxes and the national government in the form of income taxes. Therefore, if it is acceptable to value returns to equity after debt service, it should be

acceptable to value returns to equity after partnership shares have been taken by local and federal government. The stream of returns, measurable in money terms, received by the beneficiary of certain vested rights in income-producing real estate must therefore be the after-tax spendable cash which he enjoys attributable to the real estate. The investment value of the equity is the present value of after-tax spendable cash from the point in time when the initial commitment of funds is made to the time that the equity commitment is withdrawn through sale, abandonment, or reorganization of the legal entity of ownership. The after-tax cash received in each period is discounted back to the point of initial investment as a simple Inwood reversion, and the series of reversions is then totaled to measure the present value of equity returns. The total investment value of the private vested interests (as contrasted to the public vested interest in real estate and income taxes) is then the present value of the after-tax cash benefits to equity and the present value of payments to the mortgage interests.

After-tax spendable cash in real estate may come to the investor over time from four sources in varying amounts:

1. Positive cash flows remaining from normal operational revenues over successive periods of time.
2. Positive net worth received as proceeds on sale of the property after debt and capital gain tax claims have been paid at a single point in time.
3. Surplus proceeds not subject to tax derived from refinancing

of an existing mortgage balance with a larger loan balance at infrequent points in time.

4. Spendable cash salvaged from other income subject to income taxation unless shielded by tax losses generated from real estate ownership over successive periods of time.

Positive cash flows from operations and spendable cash salvaged from other income each period must be scheduled for the anticipated time sequence. Proceeds from sale or a refinancing must be given assumed but specific calendar dates. In addition cash flow from operations or other income must be permitted to vary in each period of time because, at the very least, interest and depreciation deductions to determine taxable income will vary and over the long run most revenue and expense factors will shift in amount for a variety of reasons.

Month by month determinations of after-tax cash flows is a tedious and repetitious task well suited to the abilities of electronic data processing machines. Indeed, the accurate and extensive accounting required of this method may be a major factor in explaining the willingness of practicing appraisers to accept normalized income for appraisal purposes while paying their own CPA to calculate after-tax cash flow for the appraisers' own real estate investments.

It is recognized that determination of spendable after-tax cash involves assumptions which can be unique to a single investor or characteristic of a class of investors. If these assumptions must always be unique to one taxpayer, then any valuation of after-tax income is appropriate to investment counsel but not to appraisal. But, if certain

assumptions can be modified to reflect probable group behavior, then after-tax benefits are not only benefits to the user but marketable benefit streams appropriate to appraisal consideration. Consequently this study will first describe a valuation model for the investor and then suggest the extension of the method to appraisal.

General structure of an investment model

Investment models for the computer can be designed to produce alternative results of given actions with measures of the chance of varying degrees of success and failure,⁸ a single result with a stated probable standard error, or a single result which is simply the mechanical and mathematical result of one set of numerical assumptions.⁹ The investment model described in this paper is one of the latter types, a "heuristic model" say the decision theory people, for it runs through a single set of inputs and stops without searching for an optimal solution. Since the combination of alternative inputs is infinite, it is presumed that the analyst has narrowed his choices to a limited set of practical alternatives on the basis of his own judgment and experience. The product of the model is an extension of decisions already made by the investor or appraiser or modified as a result of previous runs on the computer. It lacks the glamour of an optimizing model or decision-making model, but it is doubtful that the art of real estate investment can either be made conclusively mechanistic or would be accepted as such by practitioners if it were. Any model builder must anticipate the resentment any computer system generates among real estate practitioners, and this model deliberately avoids infringing on matters of "judgment."

Reference to the simplified flow chart of inputs and outputs in Figure 1 will suggest the type of input information which presumes an extensive market and cost study by the investor or appraiser prior to bringing all these factors to bear in the valuation process. The gross annual rent roll, current operating expenses and real estate taxes, and the type and terms of financing all require full knowledge of the market if the data provided are to be realistic and are to justify sophisticated analysis. Depreciation assumptions, income tax decisions, and choice of discount rates require explicit choices by the investor or professional analyst. Time index adjustments of each input factor to anticipate changing market, cost, and money factors in future years require an understanding of the dynamics of real estate appropriate to the professional ideals of realtor, appraiser, or counselor. Once the analyst has made these assumptions and communicated these to the machine, the computer simply does the tedious arithmetic to produce the annual summaries of operations computed monthly as outlined in the box of Figure 1 designated "cash flow data printouts." The teaching model which follows is one of a family of alternative programs which each follow the general format of cash flow analysis but vary the degree of detail in the initial inputs to focus application to the objectives of the architect, the land planner, the tax assessor, the lender, or the appraiser.

It is important to distinguish between a model which provides financial profiles with investment valuations and an appraisal model intended to forecast purchase price in the market. The investment model must presume at the start a purchase price which is then allocated to different capital

classes for depreciation calculations for purposes of measuring taxable income. Cash returns could be valued by an array of capitalization rates to permit equivalent comparisons of mortgage-equity and after-tax investment valuation results. However, the appraisal is attempting to forecast a price, not assuming one from the start. Moreover, the appraisal must presume group behavior patterns if it is to infer a price the sub-group may typically pay. If there is group behavior, there should be only one discount rate or, more realistically, a narrow range of capitalization bracketed by two related discount rates. Therefore, for an appraisal model there must be further processing of original acquisition cost allocations to bring after-tax cash flows as discounted by the market expectation of return into balance with the forecasted purchase price. An investment model is not an appraisal technique for estimating probable selling price until it can be proven that a certain group of buyers has a certain pattern of analysis of cash flows or that these buyers rely on the results of the specific investment models in question. Thus the presentation which follows must be thought of as an investment model until the modifications necessary to reflect market behavior have been introduced or buyers in the market generally follow the output of an investment model.

To illustrate both the theory of spendable after-tax cash-flow as the basic tool of real estate finance and the application of computer techniques to simplify analysis, the forms and outputs of the University of Wisconsin Mini-Model for rental properties are used in illustrations 1 and 2 or a computer terminal which asks for the required information in a dialogue with the analyst. The sample data

is based on the investment case of a 24-unit Apartment Building described in Appendix A. The output is found in Illustrations 3 and 4. A more elaborate cash-flow simulation model for land development is provided in Appendix B to suggest how capabilities of a model can be expanded to include fancy timetables for development, detailed capital budget assumptions, and a great variety of financing packages. These models and many variations are available commercially and are in use by a variety of real estate analysts today including major sources of mortgage money.

General Explanation of Inputs

Most of the information in regard to the 24-unit Apartment Building is clearly transcribed from the data in Appendix A to the input forms of Illustrations 1 and 2. Note that each is described in English so that the output form is identified in a fashion custom tailored to the property to be analyzed. A general description of what can or cannot be done with these input forms is always attached to the input form or available by inquiry on the computer terminal, and these instructions are found in Figures 2 and 3. However, several items need additional explanation:

Card type 1 - provides for student identification by name and number should there be two "John Smith's" in a class while the course and section number is for internal administration purposes. Of relevance to the real estate question is the decision by the investor that he wishes to receive a minimum of 18% per annum compounded on the Inwood basis and his determination that he will be an average or marginal income tax level of 30%. The last two items in columns 61 and 64 simply inform the computer how many cards to read for Card types 3 and 4 which are the only multiple cards in the program.

FIGURE 2:

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model
February, 1970
Instructions For Use of the Coding Form

GENERAL

1. Cards were designed to require no change in field spacing stops set on the keypunching machine so that large batches of input forms may be done at once and so that a student may keypunch single cards to alter one or more assumptions for a second or third run. All decimal points and dashes must be punched where indicated on the coding form.
2. One character or number for each blank. Decimal points and dashes may not be altered or written over.
3. All dollar amounts must be coded in the rightmost portion of the allowed space - do not include dollar signs. Decimal figures must be corrected to the left relative to pre-printed decimal point.
4. For numerical inputs blank spaces will be read as a zero (0); for alphabetical inputs, blank spaces will provide white space on the output.

CARD 1

1. Last two digits of social security number required to differentiate between those with the same name.
2. Course and section number required for internal school accounting.
3. The equity discount rate is the yield rate at which the investor wishes to determine the present value of the project, discounting all cash returns to the beginning of the first period.
4. The income tax rate is the marginal rate assumed by the investor.
5. "# cards #3" indicates the number of component description cards (1-6) in column 61. "# cards #4" indicates the number of mortgage cards (1-4) in column 64. Failure to code these properly will terminate processing of your data and you will receive no output.

CARD 2

1. Project description can be an address, firm name, or description of project and run such as "24 Unit Apart. - 90% loan".
2. Extraordinary expenses can be used to deduct for high vacancies in first year, to eliminate excess rents in the first year, to recognize commissions for leasing space, to permit higher operating costs during a "shake down" year, etc.
3. The staging multiplier permits an optional increase in gross rent, expenses, and real estate taxes due to an increase in rentable area provided for in the Component Description and Mortgage Description cards Starting Year column. Indicate year increase is to take effect in column marked "Staging Year" (1-9) DO NOT STAGE IN TENTH YEAR! Both year and multiplier must be coded but if staging option is not used leave both coding spaces blank.

CARD 3

1. Component description might be land, structure, and furnishings and you would repeat these categories if you wished to build a second stage.
2. % depreciable is 100% minus % of salvage.
3. Depreciation method code:
 - 0 = no depreciation
 - 1 = sum of the digits
 - 2 = straight line depreciation
 - 3 = 125% declining balance
 - 4 = 150% declining balance
 - 5 = 200% declining balance

4. Starting year is always a 1 for the original investment components and the staging year for any additions or replacement of such short-lived items as furniture.
5. Useful life is number of years over which component will be depreciated (0-75).

CARD 4

1. Mortgage description may include any type of financial instrument. For example, a land lease could be defined as a site worth \$300,000, monthly payment would be 1/12 of annual rent and interest rate would be the annual rent divided by the indicated value of the land.
2. Monthly payment will be computed if not indicated.
3. Interest rates are constant annual rates. 8.5% interest = .0850.
4. Bonus interest should be stated as a percent of gross rents which must be paid to the lender. Bonus interest paid only if cash flow is positive.
5. Starting and Ending years are the first and last years payments are to be made.
6. If mortgage term is longer than ten years or is not refinanced, place a 10 in the column "Ending Year".
7. Indicate full amortization term in years of mortgage in column "Term".
8. You must indicate which new mortgage will replace a specific old mortgage. Otherwise if a loan matures during a projection period, final balance will appear in cash flow statement as "Principal Payment" and if it exceeds available cash, there will be an automatic working capital loan.
9. If loan for staging is less than cost of capital component for that stage required, cash is charged to working capital loan.

CARD 5

1. Expenses do not include real estate taxes. Expenses may include only cash outlay items or may include reserves for replacement and redecorating. In the first case you may wish to include several incremental cost component outlays for remodeling and refurnishing as an alternative to regular maintenance and reserve allocation.
2. All growth rates are constant annual rates. 5% growth rate = .05
-5% growth rate = -.05
Patterns of growth rates should be consistent; if rents are constant and expenses are expected to increase, project value rate of growth should probably decline.

CARD 6

1. Real estate taxes are for the first year. In Madison the average annual growth in real estate taxes is exceeding 6% and an average increase of 5% a year is the typical minimum rate of tax increase in cities throughout Wisconsin.
2. Project value rate of growth is a constant annual rate.

CARD 7

1. The vacancy rate is the percent of rent lost due to vacancy and turnover. For example, if an apartment has 10 units it has 120 monthly rental units. If 6 units turn over and are vacant 1 month the vacancy rate is 6/120 or 5%.
2. The working capital loan interest rate is either the 90 day note rate at the bank or the equity discount rate reflecting the yield required on short-term advances of equity money.

- Card type 2 - provides not only a title for the output but several special features as well. The item "extraordinary expenses" permits recognition of first-year variations in rent levels, vacancy rates or expenses which may characterize a project. In this case the facts indicated that there would be additional expenditures of \$2,100 in the first year and that there would be additional vacancies of 12% during the refurbishing and re-leasing of apartments during the first year. These adjustments combined mean that net cash income in the first year will be \$7,625 less than what might otherwise be expected. This device is therefore a method of modifying the simple linear time indexes for rents, expenses and taxes which are offered on card types 5 and 6. The staging multiplier and the staging year were not used in this case but permit the student one expansion of his project. For example the project might be doubled in size in the third year and the staging multiplier would multiply rents and expenses and real estate taxes by a multiplier of two. The simplification permits the student to phase capital investment to anticipate absorption rates of space but leads to some oversimplification of variable cost relationships which may exist with scale.
- Card type 3 - itemizes 6 classes of assets according to their depreciation group or starting year. It is more than adequate for a single investment but it should be expanded for elaborate staging. The arbitrary limit was to control key-punching and computer time expenses for the department.
- Card type 4 - The method of mortgage payment can be stated as a fixed dollar amount, as a level amortized mortgage if the number of months in the term of the mortgage is known, or as an annual constant rate a percentage of the mortgage amount converted to a monthly payment. To permit periodic refinancing, it is possible to start and stop mortgage obligation in any given month. For example, a first mortgage may be acquired at the time of purchase and a second mortgage then defined which begins 6 months later, with both mortgage balances replaced by a new first mortgage in the sixth year. With this device it is possible to test the impact of alternative financial loans on investment value and equity yield or to measure the influence on investment value of a loan closed to repayment for 10 years instead of 5 during an inflationary period. The bonus interest provision allows the investor to measure the true cost of his financing over time relative to mortgage

balance, to cash-flow, and to after-tax investment value. Because the repayment method is not tied directly to the mortgage due date, it is possible to finance with notes such as a 10-year mortgage, amortized on a 25-year basis, and ballooned for the balance at the end of 10 years. Payment of a mature mortgage balance is made directly from after-tax cash, and proceeds from new loans also go to the same account. Therefore, if the refinancing provides additional cash to the investor, it is recognized as a return, while deficit cash is first covered by operational income and then by an automatic working capital loan, a feature to be discussed when describing Card type 7. Since value can be created by the form and pattern of financing available to the investor and since mortgage credit is becoming so elastic in its terms and costs, complete flexibility is needed for sophisticated investment planning. The computations by the computer eliminate the need for the investor using any complex set of tables for a single result, while at the same time they reveal to the investor the exact cash-flow implications of the finance plan for each year under study.

Card type 5 - begins with the so-called normalized gross rent and operating expenses (excluding real estate taxes). When calculating after-tax spendable cash, it is obvious that taxable income must change, even when the net income before tax and debt service is a constant dollar amount. However, it is likely that over the life of any particular investment this net income figure will also tend to shift as the elements which constitute revenue and expenses alter over time. Therefore, a time schedule or index of change permits the analyst to make explicit assumptions in regard to the future in order to test the sensitivity of his yield expectations to changes in the time-line of developments in rents or occupancy, real estate taxes and expenses, or resale price of his investment. One might test three sets of assumptions in regard to the future by holding the elements of net income constant in one case, inflating costs and prices in a second case, or perhaps inflating costs and deflating rents and resale to have a picture of the slope of downside risk as a third alternative.

Card type 6 - Project value growth rate is a resale price index which provides an opportunity to produce true depreciation, defined as the difference between original outlays and net recapture on resale. Inflation should be understated to reflect commissions and other claims on resale models permit alternative adjustments for resale costs or the curve of property value change. Time indexes are a simple way of

probing the investment significance of trends and future events. It is too early to find much acceptance of probability and risk models of real estate investment among those who make the market. Much real estate investment is made in anticipation of inflation, and this index model would provide an opportunity to measure just how inflation should affect purchase price limits currently. Gross rents must rise faster than taxes and expenses if resale price is to rise without a change in market discount factors. The reasonable expectations of profits due to inflationary price rise when converted to indexes in this section may not justify a contemplated purchase price when yield is actually measured for this set of assumptions. The use of an explicit cash-flow model, even though the indexes are only "guesstimates," may underscore the character of excessive asking prices. It is still true in real estate that most profits are made with a good buy rather than a lucky sale.

Card type 7 - Requires only a statement of vacancy rate and the interest cost of short term money required to cover operating deficits or refinancing shortages. The 9% rate in this case indicates the investor expects to use bank money, for if he used his own cash it would be necessary to indicate a minimum of 18% just as he required on his original investment. These interest costs are added to working capital loan balance due and are not subtracted at tax deductible interest rates by the model.

General Explanation of Outputs

The teaching model provides two pages of output, Illustration #3 which summarizes assumptions and financing repayment schedule, and Illustration #4 which provides four types of information, a 10 year cash-flow forecast, a 10 year net worth analysis, a 10 year ratio analysis, and the present value of the project as a total of the present value of each investment interest discounted at the appropriate rate. In short, each source of spendable dollars for the investor is identified, given a dollar payment and scheduled for the fiscal year in which the outlay or receipt would occur. Present value concepts of money at work are meaningless without a reasonable effort to establish or assume the

the time-line of financial events related to the project.

NET INCOME in Illustration #4 represents the traditional method of real estate productivity although it is "not normalized" for the projection period. This net income must be adjusted for deductible DEPRECIATION AND INTEREST to determine TAXABLE INCOME, and if taxable income is negative there can be TAX SAVINGS ON OTHER INCOME. Net income less interest and principal payments determines CASH THROWOFF before income taxes and if cash throwoff is negative it is necessary to replenish cash with a short-term WORKING CAPITAL LOAN. The term "cash throwoff" represents a pre-tax but after debt service item and is standard terminology in the new income property manual published by the Society of Real Estate Appraisers. The estimated INCOME TAXES are then subtracted to determine cash from operations which must first be applied to working capital loan balances due before dropping through to SPENDABLE CASH AFTER TAXES. Spendable cash after taxes includes surplus proceeds for refinancing and measures the yearly cash dividend to the investor, the income stream which so many theorists have generalized. It is highly unlikely that the curve of this cash flow would permit any averaging (ie, normalizing) for valuation purposes since an annual forecast already represents an average of monthly receipts. At current interest rates and required equity yields a difference of one month means a difference of 1% per annum or more.

In addition to cash dividends there is the potential benefit of equity enhancement due to appreciation in the market value of the property or repayment of loans in excess of market value decline so the investor is concerned with the changing position of the net worth of the property. Cash realized on resale would be net worth less capital

gains taxes and deferred income taxes on excess depreciation and these computations are made as a preliminary to valuation of all cash returns to the investor assuming ownership for a given period of years and then resale at the market value for the year specified as the resale date. Computation of the capital gain and taxes on sale is explained in Figures 4 and 5.

Analytical Ratios

To measure risk for the mortgage investor and the equity investor two ratios are provided. For the lender the DEFAULT RATIO indicates the cash breakeven point as a % of gross rent as defined in Fig. 4. The lender views this as the variation in the income stream which would affect repayment of the loan according to the terms. The equity investor has a more static view of risk for he is concerned with rapid recovery of his original cash investment. In Illustration 4 the apartment case indicates that considering all AFTER-TAX CASH RECEIVED AS A RATIO OF INITIAL CASH EQUITY, the equity investor has no cash risk after 5 1/2 years have passed while the lender after the refinancing still faces an exposure of \$185,983. Risk stated in terms of loss of the original investment is therefore much higher for the lender than for the equity investor, a fact which runs counter to the traditional viewpoint but which explains the economic logic of higher mortgage yields and equity participation.

BONUS INTEREST paid is converted to an interest cost by dividing the payments by the average loan balance outstanding during each fiscal year. A bonus interest stated as 4% of gross rent appears far more injurious to the equity position than restatement as % of loan balance

FIGURE 4:

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model
February, 1970
Basic Definitions of Model Outputs

- 1) Current period return on Net Worth before taxes =

$$\frac{\text{Cash Throw-off} + \text{Change in Net Worth}}{\text{Net Worth at End of Previous Year}}$$

- 2) Current period return on net worth after taxes =

$$\frac{\text{Spensible cash} + \text{tax savings on other income} + (\text{change in net worth} - \text{change in cap. gains tax})}{\text{Net worth at the end of previous year less capital gains tax of previous year}}$$

- 3) Cash Return on original cash equity before taxes =

$$\frac{\text{Cash throw-off}}{\text{Total initial Investment less Initial Mortgage Debt}} \\ \text{(This is adjusted for staged projects)}$$

- 4) Cash Return on original equity cash after taxes =
(This is adjusted for staged projects)

$$\frac{\text{Spensible Cash after taxes} + \text{Tax savings on other income}}{\text{Total initial investment cost less initial mtg. debt}}$$

- 5) Net income - market value ratio

$$\frac{\text{Net Income}}{\text{Market Value for the same period}}$$

- 6) After tax cash recovered - cash equity ratio (payback) =

$$\frac{\text{Accumulated spendable cash after taxes} + \text{accumulated tax savings on other income}}{\text{Cash equity required}}$$

- 7) Default ratio =

$$\frac{\text{Operating Exp.} + \text{R. E. Taxes} + \text{Prin. \& Interest on Mtge.} + \text{Working Cap. Loan Prin. Repayment}}{\text{Gross Income}}$$

FIGURE 5:

8) Lender Bonus Interest Rate =

$$\frac{\% \text{ of effective gross (not to exceed cash throw-off for period)}}{\text{balance due on loan at beginning of period}}$$

9) Resale Market Value at End of Year

$$\text{Total Initial Investment Cost} + \frac{\text{Additional staged investment}}{\text{Index for Year}}$$

10) Net worth of property =

$$\text{Market value less balance of loans less working capital loans}$$

11) A. Sales proceeds subject to capital gains tax =

$$\text{Market value} - (\text{Total Capital Investment} - \text{Straight-line depreciation} - \text{Allowed excess depreciation})$$

B. Sales proceeds subject to income tax =

$$\text{Cumulative depreciation taken} - \text{Straight-line depreciation} - \text{Allowed excess depreciation}$$

C. Taxes on sale = $(A \times 1/2 \text{ Income Tax rate}^*) + (B \times \text{Income Tax Rate})$
* Not to exceed 25%

12) Present value of project before taxes =

$$\text{Original mortgage balance} + \text{PV of received stream of cash throw-off} + \text{PV of net worth if sold at end of year indicated by column number.}$$

13) Present value of project after taxes =

$$\text{Original mortgage balance} + \text{present value of received stream of spendable cash after taxes} + \text{PV of received tax savings on other income} + \text{PV of (net worth less capital gains tax) if sold at end of year indicated by column number.}$$

on standard as in year 6 of Illustration 4 where the effective additional interest cost was 1.22%.

The universal interest in participations in future increases in gross rent, cash throwoff or net worth demands that the mortgage lender make the spendable cash-flow forecast advocated a necessity. Otherwise any lender estimate of yield is simply crapshooting finance. More sophisticated computer programs are available to compute yield from any alternative combination of participation loan formulas. The ratio of cash throwoff returns to original cash equity or spendable cash and tax savings as a ratio of original cash equity is a method by which many investors analyze their returns. For example, the drop of after-tax cash below before tax cash indicates a sell point in the 7th year of the investment which is confirmed by valuation analysis below.

Valuation of Cash Returns to the Investor

The real estate fraternity is accustomed to discounting future returns by the Inwood Tables and the mortgage equity approach continues this tradition. The teaching model therefore uses Inwood despite the fact that it is misleading and fallacious when applied to equity positions or loans from non-financial institutions. For the 24-unit Apartment Case the investment value of the entire project has been computed by determining the sum of the present values of the initial interests in the project. Reference to Figure 5 will show that the computation involves the original mortgage balances which represent the present value to the lender of debt service payments plus the present value of cash throwoff for before tax value or the present value of spendable cash after taxes plus tax savings on other income discounted

at the *minimum acceptable equity return rate*, in this case 18%.

The sum of these present values must equal or exceed the total initial investment in the project to justify the project from a rate of return viewpoint. Thus in Illustration #4, on the bottom line, purchase and sale at the end of the first year or at the end of the second year at the market value indicated for these years would not justify the total initial investment. It would be necessary to buy and hold until the third year or preferably until the 7th year to maximize yield and to achieve 18% compounded after taxes.

It is recognized that the assumptions of Inwood discounting do not hold true in most real estate situations. Inwood assumes immediate reinvestment of cash received from interest and recapture of principal at the same rate. Most equity investors make discrete investments from time to time using short term investments in the interim. Secondly, alternative investments to real estate in terms of liquidity, security, management, or portfolio diversification may have priority at the time of reinvestment. Then, again, the relative attractiveness of a real estate property will vary from year to year as the yields of alternative investments or tax laws change. Therefore it is much more realistic to assume reinvestment of future receipts or postponed equity commitments at an average rate of return for the portfolio investor or a specific rate of return for short term funds. The computer would discount to the present future commitments for capital outlays of a staged investment and compound to the end of the forecast period the receipts as they became available for reinvestment. It would then search for the discount factor which makes the present value of future

outlays equivalent to the future value of expected returns. A demonstration of this technique appears on the last page of Appendix B, the land development model. On the last two lines on that page note that Inwood discounting at 25% indicates the project is feasible while the real return on investment never exceeds 18%. Model building for investment valuation of real estate is hampered by traditional real estate discounting methods which are appropriate to large portfolio, instant reinvestment mortgage lending but not appropriate to equity investors in real estate.

An Investment Model as an Appraisal Technique

Professor R. U. Ratcliff¹⁰ has strongly stated the case that in the majority of assignments, the task of the appraiser is to forecast the probable sales price of a specific property. This objective is the premise of discussion regarding conversion of investment models to an appraisal method to forecast the central tendency of price negotiations for a specific property. The concept of market action implies group behavior, knowledgeable buyers and sellers with alternative courses of action open to each, striking a bargain only when their respective self-interests will agree to buy and sell. Professor Ratcliff has stated: "There are only two devices open to the appraiser for predictive purposes -- statistical inference and simulation."¹¹ Market comparison as an approach to value is a rough form of statistical inference and more recently much has been written on statistical regression analysis of sales prices of residential properties. Simulation is a twenty-five cent word for describing what an appraiser does to predict value, most specifically when using the income approach. However, present income approach methods are challenged because they do not accurately simulate

how sophisticated investors value income streams. Spendable after-tax cash flow analysis is far more representative of at least real estate investment counseling techniques and therefore a more precise simulation approach to value.

The spendable cash simulation approach is only an investment valuation model when the inputs for time index dynamics and tax computations characterize a specific investor. However, Professor William Kinnard has underscored¹² the fact that when the appraiser has made a determination on highest and best use, he has also implied the probable group of buyers who would make such use of the property. In that case an appraiser, knowledgeable in regard to the decision-making logic and probable financial and tax pattern of the group of investors inferred by a statement on highest and best use, can produce an investment value from simulation that is the most probable sales price for the investment opportunity in question. A computer cash flow model only relieves the appraiser of clerical and computational responsibility while permitting him to stress his professional understanding of economic and investment research and analysis.

Within the implications of the above proposition, there are four means by which the investment model may become an appraisal model:

1. Widespread use of spendable cash models by investors in different parts of the country would mean that the model does simulate and direct investor behavior.
2. Research of the pattern of investor assumptions and expectations in different areas of the country would produce aggregate averages similar in concept to the data provided by

nationwide standardized accounting systems for industries like the motel-hotel business. Careful study of sales prices on properties thus analyzed for the perspective buyer might suggest the statistical dispersion of price around value. In addition, appraisers would have incentive to analyze investor group patterns in their areas to establish parameters for the dynamic assumptions of a cash flow model.

3. Eventual agreement on a cash flow model format will one day permit widespread use of a risk model in which revenues, expenses financing, and resale estimates can be stated in ranges. The computer would then determine the distribution of alternative results and the probability of given yields being achieved at alternative purchase prices. The price which had the highest probability of achieving a yield acceptable to investors might be defined as the most probable sales price of the property.

By whatever means spendable cash computer models influence investor behavior and appraisal simulation to predict sales price, with time it should be possible to relate the variation in sales prices to values simulated in the bargaining process. The range of prices relative to values as a result of better investment simulation today will permit introduction of statistical inference methods tomorrow. Spendable cash flow models indirectly advance both the concepts of Babcock in the thirties and Ratcliff in the sixties.

A Final Thought

As a final thought on the use of computer simulation models, one could argue that it may lead to resolution of a basic dilemma in appraisal theory for income properties. If rental income power is a measure

of market demand, and if historical costs are necessary to measure capital and operating tax deductible budget items, and if financial and yield patterns represent price to income relationships in investor markets--might it be that an after-tax spendable cash income approach represents a synthesis of the three approaches to value. Such a synthesis would eliminate the necessity of the more awkward process of correlation. In any even model input and output material permits the appraiser and the mortgage banker to demonstrate a professional understanding of real estate investment dynamics appropriate to the modern trend toward participation loans and hybrid financing which stive to trade-off the 4 sources of cash between different types of investor objectives. The model suggests that the stylized ritual of the present income approach can be modified so that Income (I) and Capitalization Rate (C) can be factual data rather than abstract fictional concepts.

Notes

¹Arthur M. Weimer, "History of Value Theory for the Appraiser," The Appraisal Journal, October, 1960, pp. 469-83.

²Frederick M. Babcock, Evaluation of Real Estate (New York: McGraw-Hill, 1932).

³Richard U. Ratcliff, "Capitalized Income Is Not Market Value," The Appraisal Journal, January, 1968, pp. 33-42.

⁴James E. Gibbons, "Mortgage-Equity Capitalization: Ellwood Method," The Appraisal Journal, April, 1966, pp. 196-203.

⁵Paul F. Wendt, "Ellwood, Inwood, and the Internal Rate of Return," The Appraisal Journal, October, 1967, pp. 561-601.

⁶Ratcliff, p. 36.

⁷Spensible cash is recognized by investment counselors but not appraisers. Consider James M. McMichael, Real Estate Investment Analysis and Programming (Los Angeles: California Real Estate Association, 1965).

⁸The Harvard Group, Inc. "A Risk Model for Real Estate Investment Analysis," (A mimeographed business prospectus traced to the Harvard School of Business but authors are unknown).

⁹For other discussions of real estate investment models, see: Richard U. Ratcliff (ed.), Colloquium on Computer Application in Real Estate Investment Analysis, (Faculty of Commerce and Business Administration, University of British Columbia, 1968).

¹⁰Richard U. Ratcliff, Modern Real Estate Valuation (Madison, Wisconsin: Democratic Press, 1965).

¹¹ibid., p. 56.

¹²William N. Kinnard, Jr., "New Thinking in Appraisal Theory," The Real Estate Appraiser, August, 1968.

Appendix A

UNIVERSITY OF WISCONSIN Real Estate Investment Teaching Model Demonstration Case Study #1

ANALYSIS FOR PURCHASE OF APARTMENT HOUSE INVESTMENT

1. Assume you wish to analyze the investment value at alternative purchase prices of a 24 unit apartment building, located at 2575 University Avenue, Madison, Wisconsin. The building has twelve two-bedroom apartments that each rent furnished for \$140 per month and twelve one-bedroom apartments that rent each for \$125 per month. The building is five years old, unfurnished, in need of maintenance and available as is for about \$225,000.
2. The building is well located and vacant land in the area is selling for about \$1700 per unit. This means that \$40,000 of the purchase price could be designated as land value. In addition to the land and building, the purchase price could be allocated to include \$12,500 for the elevator and \$7,200 to the parking stalls.
3. Market analysis indicates that the building would rent very well if all the units were carpeted and furnished. For this work it is estimated that it would cost \$600 per two-bedroom unit and \$500 for each one-bedroom unit or a total investment of \$13,200 by the prospective buyer.
4. The total capital expenditures could be allocated for depreciation purposes as follows, keeping in mind that the prospect would be a second user and therefore only entitled to a maximum of 150% declining balance except for his new investment in furnishing. The percent depreciable and the number of years of remaining useful life are reasonable estimates given some knowledge of the practices of the Internal Revenue Service and the condition of the building:

land	\$40,000			No depreciation allowed
parking	7,500			50% 10 years 150%
furnishings	13,200			100% 7 years sum of the digits
building	177,500			100% 35 years 150%
transaction costs	1,800			100% 35 years 150%

5. After completion of repairs and refurbishing it is anticipated that the two-bedroom apartments will rent for \$170 a month and the one-bedrooms \$150 per month. The gross rent roll of the building would then be:

$$\$170 \times 12 \times 12 = 24,480$$

$$\$150 \times 12 \times 12 = 21,600$$

$$\underline{\$46,080}$$

6. During the first year of changeover in ownership, refurbishing and re-leasing you estimate that each unit will be vacant about two months, that is about one-sixth of the time, (i.e. a vacancy of 17%) so that your average occupancy will

APARTMENT CASE STUDY #1

be 83% of potential for the first year. Thereafter you anticipate a normal vacancy rate of 5%, or an occupancy of 95%.

7. The current real estate and personal property taxes to be paid in the first year following purchase are estimated to be \$9,000. The normal current operating expenses, excluding real estate taxes but including management fees, are determined to be \$8,400.
8. The property has been poorly maintained and will require additional expenditures of \$2100 in the first year to justify the new rent schedule. This deferred maintenance charge will be added to the normal operating expenses of the first year.
9. The buyer is considering this property because his accountant suggested that with his 30% tax bracket, including state and federal taxes, he should look for some tax shelter to offset some of his other current income. Using the accelerated method of depreciation, this real estate project should satisfy this requirement.
10. The investor feels that while the normal ratio of market value to income in his community ranges between 8% and 11%, proper financing should raise the pre-tax yield on his cash equity to at least 18%. The accountant suggest that if the investor considers the cash saved on deferred income taxes due to depreciation, the investor should seek at least 18% to 22% on his investment annually on an after-tax basis.
11. The financing available to the investor would initially combine the assumption of a first mortgage with a balance of \$180,000 with 240 months to run and a second mortgage taken back by the seller to be repaid in ten years, in monthly payments. The investor would plan to refinance both loans at the end of the sixth year of ownership when the prepayment penalty would lapse on the first mortgage. The seller feels he should receive \$1,000 as points on the second mortgage since that is the discount he will take when he sells the note.

1st Mortgage	180,000 20 year 7 3/4%
	5 year balloon
Private loan	15,000 10 year 8 1/2% \$1000 discount
	5 year balloon
12. While the seller will pay for title insurance, a survey, and related items the buyer expects to pay about \$800 in professional appraisal and legal fees related to this transaction. These fees plus points in #11 equal transaction costs of \$1800 which increase original cash required and must be amortized over life of structure.
13. Temporary cash deficits at the end of any month can be covered with bank notes at a rate of 9% per annum and repaid out of positive cash flows when available.
14. The financial plan is to maintain a highly leveraged position and therefore pay-off the original loans at the end of the fifth year by obtaining a new mortgage. To discover some measure of influence of such refinancing on yield to equity and cash flows, the investor will assume that in five years the best loan he could obtain would equal \$190,000 for 20 year term at 8% interest. The age of the building at that time would require granting a bonus interest feature equal to 4% of gross rent as of the beginning of sixth year when the loan begins.

APARTMENT CASE STUDY #1

15. In the seventh year it is anticipated that additional refurbishing would be required in addition to ordinary annual replacement expenses. \$10,000 is budgeted as additional refurbishing component to start for the eighth year and it is expected that appliance dealer terms will be at 9% interest and 18% constant, that is \$150 a month.
16. With time, rents, expenses, real estate taxes, and resale value of the property could be expected to shift due to age of the property and inflation.
 - a. Rents are determined to increase at a rate of 2% per year of first year rents thus indicating a relative loss of growth as the property ages.
 - b. Operating expenses excluding real estate taxes have also generally increased in the community at a rate of 2% per year relative to first year costs.
 - c. Real estate taxes, however, have increased at a rate of at least 5% per year for the last five years in the community and no relief is immediately in sight.
 - d. Extraordinary expenses in the first year will include \$2100 of deferred maintenance which can be deducted as an expense rather than capitalized. In addition rents are over-stated pending completion of remodeling in the first year and a return to normal vacancy of 5% of gross. The difference between an expected vacancy of 17% and 5% is 12% of gross or \$5525. To adjust net income accordingly extraordinary expenses are therefore the sum of \$2100 + \$5525 or \$7625.
17. A conservative expectation for resale price of this apartment building which will be 15 years old at the end of the ten-year forecast is \$275,00 or about 115% of the original investment in the property. However, the cost of sale for brokers fees, etc. would be at least 5% so that the investor might receive net liquidating sale proceeds of about 110% of the original investment. Thus the growth rate in liquidating sale proceeds is assumed to be about 1% a year. For example at the end of the second year it is assumed that the investor could sell at 106% but considering a 5% transaction cost he would realize a net market value of 101% of his original investment. It should be pointed out that while such a factor for inflation seems modest, in a highly leveraged position the impact of a optimistic resale price on equity yield can be very misleading in the early years. (Caveat: If the building is a good investment under conservative assumptions it is a better investment if more capital gains and income are realized than anticipated. It is less risky to make money with sound buys than with dreams of good sales.)

School of Mortgage Banking, Course III
Northwestern University, July 1, 1970

Mortgage-Equity and After-Tax Real Estate Investment Analysis
Part II

Presented by
Professor James A. Graaskamp
University of Wisconsin, School of Business

- I. Cash flow simulation of a real estate investment opportunity.
 - A. The fallacy of normalized income.
 - B. Four sources of spendable cash.
 1. Operating revenue.
 2. Capital gains.
 3. Refinancing surplus.
 4. Tax savings on other income.
 - C. The problem of measuring yield
 1. On-going yield and opportunity costs.
 2. Retrospective analysis of yield.
 3. Discounting versus modern internal rate of return analysis.
 - D. Flow chart of model components.
- II. Actual analysis of an apartment house investment.
 - A. Case facts
 - B. Communication with the computer.
 1. Cards & tape inputs.
 2. Office terminal inputs.
 3. Economics of computer use.
 - C. Format of computer communications to analyst.
 - D. Definition of terms.
- III. Applications of a simulation model.
 - A. Design analysis.
 - B. Purchase offer analysis.
 - C. Mortgage loan application analysis.
 - D. Government policy analysis.
 - E. Application to valuation theory.
 - F. Inversion and computation of required rent.
- IV. Other appraisal applications of the computer.
 - A. SRA data bank of sales.
 - B. Computerized assessment systems based on cost of replacement.
 - C. Computerized appraisal of residential property directly from sales data.
 - D. Computerized techniques for analysis of consumer markets.
 - E. Simulation of regional economic growth potentials.
 - F. Simulation of a single real estate investment potential.

SCHOOL OF MORTGAGE BANKING, COURSE III
Northwestern University, July 1, 1970

Today's Targets:

1. What motivates real estate investors to do the things they do? - Montgomery
 2. How is this motivation codified into a realistic capitalization process which reflects investor behavior in the market place? - Gibbons
 3. Time Value of Money, Return on Investment, and the Competition for Capital - Montgomery
 4. How do you measure the benefits and value of real estate interests via computer analysis? - Greenbaum ✕✕
-

Investor Motivation and Its Effect on Financing and Value

Presented by

J. Thomas Montgomery - 2nd V.P.
Travelers Insurance Company

- I. The unique characteristics of a real estate equity investment as compared to other kinds of unrelated investments
 - A. Leverage
 - What is It

- The Manipulation of the Annual Mortgage Constant

- Soft Money/Hard Money

B. Tax Depreciation

- What is It

- What is Its Effect

- The 'game plan' and the pattern

- Link Between Leverage and Tax Depreciation

G. Sources of Equity Appreciation

- Cashing In

II. The Search for the Common Labels

- Net Operating Income

- Cash Throw-off (Before-Tax Cash Flow)

- After-Tax Cash Flow

III. The Calculation of the Income Tax Payment

- What is Deductible

- Tax Shelter

- Excess Tax Shelter

IV. Some Random Observations

- Real Estate Accounting

- The 4 Kinds of Money

- Value is a reasonable range

V. Mortgage/Equity Capitalization - a logical extension and result of investor behavior

LECTURE OUTLINE ON

INVESTOR MOTIVATION, TIME VALUE OF MONEY,
COMPETITION FOR CAPITAL, AND
INCOME PROPERTY ANALYSIS AND COMPUTER TECHNIQUES

J. T. Montgomery
Second Vice President
Travelers Insurance Company
Hartford, Connecticut

Dr. James A. Graaskamp
Assistant Professor of Business
Graduate School of Business
The University of Wisconsin
Madison, Wisconsin

Advanced Case-Study Seminar on Income Property Financing

December 13-19, 1970

Michigan State University December 14, 1970

- I. Capitalization in a Nutshell
 - A. Traditional appraisal practice is a net income multiplier of initial year income
 - B. Ellwood established point that cash dividend and reversion to be differentiated.
 - C. Traditional appraisal and safety through financial cushions died with fixed dollar mortgages and introduction of participation loans.
 - D. Pleasure-Pain-Bail out Theory of Mortgage lending.
 1. Motivation through profit of the sting of a loss
 2. Extrication when all else fails
 3. Traditional appraisal ignores the cash cycle, the tax cycle, or the creative surplus of development.
 4. Motivation and definition of yield.
- II. Cash Flow Simulation of a Real Estate Investment opportunity.
 - A. The Fallacy of normalized income.
 - B. Four sources of spendable cash.
 1. Operating revenue
 2. Capital gains
 3. Refinancing surplus
 4. Tax savings on other income
 - C. The problems of measuring yield.
 1. On-going yield and opportunity costs
 2. Retrospective analysis of yield
 3. Discounting versus modern internal rate of return analysis
 4. The cost of capital theory of financial institutions
 - D. Flow chart of Model apartments.
- III. Actual Analysis of an Apartment House Investment
 - A. Case facts.
 - B. Communication with a computer
 1. Cards and tape input
 2. Office terminal inputs
 3. Economics of computer use
 - C. Format of computer communications to analyst
 - D. Definition of terms
 - E. EDUCARE
 - F. Time sharing services available
 - G. Work sheets available from Hodges and S.R.A.

ADVANCED INCOME PROPERTY CASE STUDY SEMINAR
MICHIGAN STATE UNIVERSITY
DECEMBER 14, 1970

1:00 - 6:00 p.m.

Montgomery and Graaskamp

Targets

- I. What motivates real estate investors to do the things they do? Montgomery
- II. How is this motivation codified into a realistic capitalization process which reflects investor behavior in the market place? Montgomery
- III. Time Value of Money, Return on Investment, and the Competition for Capital Montgomery
- IV. Who says capitalization is difficult to understand? Graaskamp
- V. How do you analyze and forecast the benefits and value of a real estate investment interest via computer technizues? Graaskamp

J. Thomas Montgomery - 2nd V.P. (M.A.I.)
Travelers Insurance Company
Hartford, Connecticut

James A. Graaskamp, Ph.D., C.R.E.
Associate Professor of Real Estate
University of Wisconsin
Madison, Wisconsin

Montgomery/Graaskamp

A. INVESTOR MOTIVATION AND ITS EFFECT ON FINANCING AND VALUE - Montgomery

WHAT ARE THE UNIQUE CHARACTERISTICS OF A REAL ESTATE EQUITY INVESTMENT AS COMPARED GENERALLY TO OTHER KINDS OF UNRELATED INVESTMENTS?

- (1) AN ABILITY TO LEVERAGE A SOMETIMES MEDIOCRE NET OPERATING INCOME STREAM THRU FINANCING OF ALL KINDS

- (2) AN ABILITY TO SHELTER PART OR ALL OF THE ANNUAL CASH THROW OFF FROM THE PAYMENT OF INCOME TAXES

- (3) AN OPPORTUNITY TO LOOK FORWARD TO A "BONUS" DOWN THE ROAD IF YOUR JUDGMENTS ARE SOUND AND THE TIMES ARE GENERALLY GOOD

L E V E R A G E

- "USING OTHER PEOPLE'S MONEY TO MAKE A LESSER AMOUNT OF YOUR OWN WORK HARDER"

 - "THE ADVANTAGE GAINED BY EARNING MORE ON CAPITAL THAN IT COSTS TO BORROW IT"
-
- MOST INVESTORS INSIST ON HAVING ACCEPTABLE FINANCING BEFORE THEY WILL BUY

 - THE AVAILABILITY AND TERMS OF FINANCING AFFECT VALUE

THE ANNUAL MORTGAGE CONSTANT

THE GAME PLAN:

- (1) MAXIMUM FINANCING
- (2) LOWEST POSSIBLE ANNUAL CONSTANT
- (3) MAXIMIZE INTEREST PORTION OF CONSTANT

THE MOTIVATION

- (1) INTEREST TAX DEDUCTIBLE
- (2) AMORTIZATION IS NOT
- (3) MAXIMIZE BOTTOM LINE FIGURE
- (4) TRUE COST OF BORROWING
- (5) SOFT MONEY

TAX DEPRECIATION

- WHENEVER YOU MAKE A CAPITAL INVESTMENT WHICH WILL LIVE MORE THAN ONE TAX YEAR, IT BECOMES A PREPAID CAPITAL EXPENSE

- TAX DEPRECIATION HAS TO DO WITH THE ALLOCATION OF THIS PREPAID CAPITAL EXPENSE OVER THE USEFUL LIFE OF THE CAPITAL INVESTMENT

USEFUL LIFE

- (1) IRS GUIDE LINES

- (2) IRS RULINGS

- (3) COURT DECISIONS

T A X D E P R E C I A T I O N

- IT IS A BOOKKEEPING CHARGE ONLY

- IT DOES NOT REQUIRE AN ACTUAL OUTLAY OF CASH

- IT IS A DEDUCTIBLE EXPENSE FOR THE PURPOSE OF INCOME TAX CALCULATION

- IT ACTS TO REDUCE INCOME ON WHICH INCOME TAXES ARE PAID

- IT ACTS TO REDUCE INCOME TAX, OR RETAIN INCOME TAX THAT WOULD OTHERWISE HAVE TO BE DISBURSED

- IT ACTS TO INCREASE WHAT'S LEFT OVER ON THE VERY BOTTOM LINE

TAX DEPRECIATION

INVESTOR MOTIVATION:

- (1) A SHIFT AWAY FROM S.L. SPEEDS UP DEPRECIATION AND
TAX SHELTER IN THE EARLY YEARS
 - (2) DEPRECIATION FIGURES CHANGE TAX SITUATIONS
 - (3) MAXIMIZATION OF AFTER TAX CASH FLOW
 - (4) THE "PIPER HAS TO BE PAID"
- TAX SHELTER RUNS OUT
-

EFFECTS OF TAX DEPRECIATION AND LEVERAGE

CHRONOLOGY OF THINGS:

- STAGE 1 - EXCESS TAX SHELTER
- STAGE 2 - COMPLETE TAX SHELTER
- STAGE 3 - MINIMAL INCOME TAX PAYMENT
- STAGE 4 - LOTS OF INCOME TAX PAYMENT
- STAGE 5 - OUCH AND OUT!

LEVERAGE <-> TAX DEPRECIATION

- (1) TAX DEPRECIATION BASED ON TOTAL COST OF THE
IMPROVEMENT
- (2) TAKES INTO ACCOUNT BOTH INVESTOR'S EQUITY AND
ANY MORTGAGE DEBT
- (3) INVESTOR GETS TAX DEPRECIATION BENEFIT OF
MORTGAGEE'S INVESTMENT
- (4) INCREASE INVESTOR'S HARD DOLLAR EQUITY WITH
TAX FREE FUNDS

REAL ESTATE ACCOUNTING
(oversimplified)

GROSS INCOME	\$10,000
VACANCY ALLOWANCE	<u>500</u>
EFFECTIVE GROSS INCOME	9,500
OPERATING EXPENSES	<u>3,500</u>
<u>NET OPERATING INCOME</u>	6,000 (A)
ANNUAL DEBT SERVICE	<u>4,500</u>
<u>CASH THROW OFF</u>	1,500 (B)
INCOME TAX PAYMENT	<u>500</u>
<u>AFTER-TAX CASH FLOW</u>	1,000 (C)

THE SEARCH FOR THE UNIFORM LABEL GOES ON

A.) NET OPERATING INCOME

alias - NET INCOME

" - NET INCOME TO L & B BEFORE CAPITAL RECAPTURE

B.) CASH THROW OFF (EVERYBODY HAS BEEN PAID EXCEPT IRS)

alias - ANNUAL EQUITY DIVIDEND

" - CASH FLOW DIVIDEND

" - BEFORE-TAX CASH FLOW

" - RETURN ON EQUITY BEFORE INCOME TAXES

" - GROSS SPENDABLE INCOME

REAL ESTATE ACCOUNTING (cont'd)

(C.) AFTER-TAX CASH FLOW

alias - NET SPENDABLE INCOME

" - NET CASH FLOW

" - THE BOTTOM LINE FIGURE/WHAT'S LEFT

"CASH FLOW IS \$10,000" - WHAT DO YOU MEAN?

- PLEASE SOMEBODY HELP!

DEDUCTIONS FOR PURPOSES OF CALCULATING INCOME TAX PAYMENT (REMEMBER,
THE PROPERTY DOES NOT PAY INCOME TAXES, THE INVESTOR DOES)

- (1) ALL ACTUAL OPERATING COSTS PAID
 - EXCLUDES ADDITIONS TO CAPITAL
 - EXCLUDES APPRAISER'S RESERVES FOR REPLACEMENTS

- (2) TAX DEPRECIATION (A BOOKKEEPING CHARGE) ON IMPROVEMENTS AND PERSONALTY

- (3) MORTGAGE INTEREST (NOT MORTGAGE AMORTIZATION)

- (4) GROUND RENTS, IF ANY

- (5) START UP TAX LOSS CARRY FORWARDS NOT CAPITALIZED

- (6) EXCESS TAX SHELTER

BASIC CONFUSION (WHO DETERMINES VALUE?)

- (1) APPRAISER AND INSTITUTIONAL APPROACH TO EXPENSES AND CAPITALIZATION - BEFORE TAX
- (2) INVESTOR APPROACH TO EXPENSES AND AFTER TAX BENEFITS

INCOME TAX SHELTER

- EQUALS TAX DEPRECIATION LESS MORTGAGE AMORTIZATION WHERE MORTGAGE INTEREST IS TREATED AS AN OPERATING EXPENSE (WATCH OUT!)

- SO TO THE EXTENT THAT THE TAX DEPRECIATION DEDUCTION EXCEEDS NON-DEDUCTIBLE MORTGAGE AMORTIZATION IN A GIVEN YEAR, TAXABLE INCOME IS LESS THAN CASH THROW-OFF, AND THE EXCESS INCOME IS A TAX FREE RETURN ON THE PROPERTY

- SO INCOME TAX SHELTER = CASH THROW OFF LESS TAXABLE INCOME

EXAMPLE #1

Property Value	\$100,000
Less: Land Value	<u>\$ 10,000</u>
Subject to Tax Depreciation	\$ 90,000
<hr/>	
Mortgage Financing	\$ 75,000
Equity	<u>\$ 25,000</u>
Total Capital Requirement	\$100,000
<hr/>	
Cash Throw-Off	\$2,500
Mortgage Amortization	<u>\$1,500</u>
	\$4,000
Tax Depreciation (25 yrs. S.L)	<u>\$3,600</u>
Taxable Income	\$ 400
<hr/>	
Tax Depreciation	\$3,600
Mortgage Amortization	<u>\$1,500</u>
Tax Shelter	\$2,100
<hr/>	

EXCESS TAX SHELTER

- CASH THROW OFF COMPLETELY TAX SHELTERED

- HOW SO? - LOTS OF TAX DEDUCTIONS SUCH AS:
 - MORTGAGE INTEREST
 - ACCELERATED TAX DEPRECIATION
 - GROUND RENTS, etc.

- TAX SHELTER LEFT OVER

- USED TO SHELTER SOME OTHER RELATED STREAM OF TAXABLE INCOME

- DOES IT HAVE A VALUE? - TO WHOM? - HOW MUCH?

EXAMPLE #2

Tax Depreciation (25 yrs.-200%)	\$7,200
Mortgage Amortization	- <u>1,500</u>
Tax Shelter	\$5,700
- How Much Taxable Income?	

VALUE IS A REASONABLE RANGE AND NOT AN ESTIMATE

- 4 IDENTICAL PROPERTIES/4 DIFFERENT VALUES
- 4 DIFFERENT SETS OF AVAILABLE FINANCING
- 4 INVESTORS IN DIFFERENT TAX BRACKETS
 - RIGHT TO RECEIVE ANNUAL AFTER-TAX CASH FLOW INCREMENTS
 - RIGHT TO BENEFIT FROM ANNUAL INCREMENTS OF EXCESS TAX SHELTERS
 - RIGHT TO REFINANCE
 - RIGHT TO LOOK FORWARD TO A RESIDUAL PART OF WHICH WILL BE TAXED UNDER A CAPITAL GAINS TAX

SOURCES OF EQUITY APPRECIATION -- THE "BONUS" OR "RESIDUAL"

(1) MORTGAGE AMORTIZATION

(2) INFLATION

(3) JUDGMENT

- WHAT TO BUY
- WHAT TO PAY
- WHEN TO SELL

(4) SYNERGY THRU CREATIVE ENTERPRISE

- COMBINING BRICKS AND MORTAR ON TOP OF LAND TO PRODUCE AN ASSET WHOSE VALUE IMMEDIATELY IS GREATER THAN THE COST OF THE IMPROVEMENTS

- 1 PART LAND + 3 PARTS BLDG. = 5 PARTS VALUE

CASHING IN

(1) A MORTGAGE REFINANCE

(2) A SALE OR EXCHANGE

(3) A COMBINATION OF BOTH

REAL ESTATE ACCOUNTING

- POSITIVE ACCOUNTING PROFITS MEAN HIGHER INCOME TAX PAYMENTS AND ARE THEREBY TO BE AVOIDED
 - NEGATIVE REPORTED ACCOUNTING EARNINGS ARE THE GOAL
 - THE GAME PLAN IS TO SHOW OPERATING PROFITS AT THE SAME TIME SHOWING INCOME TAX LOSSES
 - BUT THE EFFECT ON CORPORATE EARNINGS
-

THE 4 KINDS OF MONEY

- PRINCIPAL MONEY
 - INTEREST MONEY
 - HARD MONEY
 - SOFT MONEY
-
- TODAY'S MOST IMPORTANT DISTINCTION IN THE INVESTMENT WORLD
 - DOES IT TAKE HARD DOLLARS OR SOFT DOLLARS TO OBTAIN AN INVESTMENT POSITION?

II. PREAMBLE TO MORTGAGE/EQUITY CAPITALIZATION

- INVESTORS IN THE MARKET PLACE DETERMINE VALUE
- WHAT MOTIVATES INVESTORS TO DO THE THINGS THEY DO?
- HOW IS THE MOTIVATION CONVERTED INTO A REALISTIC CAPITALIZATION PROCESS?

ASSUMPTIONS: (WHAT HAVE WE BEEN TALKING ABOUT?)

(1) THERE ARE 2 (OR MORE) CONTRIBUTIONS TO THE PURCHASE PRICE

- THE IMPACT OF LEVERAGE
- THE MANIPULATION OF THE ANNUAL MORTGAGE CONSTANT
- THE IMPACT OF INFLATION--SOFT DOLLARS

(2) INVESTOR OWNERSHIP FOR SHORTER TIME SPANS

- TAX SHELTERS RUN OUT

(3) EQUITY YIELD FLOWS FROM 2 GENERAL SOURCES

- (a) P.W. OF ANNUAL STREAMS OF "CASH THROW-OFF"

(b) P.W. OF RESIDUAL IF ANY ("BONUS")

- INFLATION
- MORTGAGE AMORTIZATION
- REAL VALUE APPRECIATION OR DEPRECIATION

THE OVERALL CAPITALIZATION RATE (9.775%)

(a) FROM HIGHLY COMPARABLE SALES

(b) SYNTHESIS - 3 WAYS

- DIRECT CAPITALIZATION/PROPERTY RESIDUAL
- BROKERS RATE
- ELLWOOD/MORTGAGE EQUITY CAPITALIZATION

- ELLWOOD IS A SYNTHESIS OF PRE-TAX DOLLAR ASSUMPTIONS

- INVESTORS THINK IN TERMS OF AFTER-TAX BENEFITS

- GRAASKAMP TO IDENTIFY AND MEASURE
- CAN BE RELATED

- INVESTORS BUY FUTURE BENEFITS TODAY

- CAPITALIZATION IS MERELY A MATHEMATICAL TOOL THAT MIRRORS MARKET BEHAVIOR;
AND DISCOUNTS FUTURE BENEFITS OF ALL SORTS BACK TO PRESENT WORTH

- IF YOU DON'T LIKE EXISTING PROCESSES, INVENT YOUR OWN!

A \$1,000 face value bond, bearing interest at 5% is offered for \$900 eight years before maturity. What is yield if purchased for \$900, held to maturity and collected at face amount?

1. Dividend Rate is: $\frac{\$50}{\$900}$ or .0555
2. Appreciation in 8 years is \$1000 - \$900 or \$100.
Rate of Appreciation if $\frac{\$100}{\$900} = 11.1$ or 11.1%
3. Interest Collection in 8 years $8 \times \$50 = \$ 400$
Principal collected 1000
Total Collection \$ 1400
Less Investment (cost) 900
Total Profit \$ 500

4. Average profit per year $\frac{\$500}{8} = \$ 62.50$
As % of investment $\frac{\$62.50}{\$900} = .0694$

5. Reversion is greater than investment, therefore yield will be less than average rate of profit per dollar of investment.

Formula: $Y - \text{app. } 1/sn = \text{Average Rate}$
 Y and $1/sn$ are unknown. Therefore we must interpolate

.07	-	.111	x	.097468	=	.05918	Target	.05550
<	.065	-	.111	x	.099237	=	$\frac{.05398}{.00520}$	$\frac{.05398}{.00152}$
	Y	=	.065	+	$\frac{.00152}{.00520}$	x	.005	
Y	=	.065	+	.0015	or	.0665		

The yield of .0665 is a composite of annual income collections (\$50) and \$1,000 reversion at end of 8 year term. The dividend rate is .0555 but this is augmented by growth of the investment to produce a yield of .0665. (This is an annual yield).

MORTGAGE-EQUITY METHOD

Rate used must provide competitive earnings plus recapture, in the light of available financing.

Mortgage-Equity Method

SHORT INCOME PROJECTION

IMPACT OF REVERSION

TAX SHELTER

REALISM

Example (Mortgage-Equity Method)

Assume investment made and property purchased at a price of \$400,000. First mortgage of \$300,000. is arranged with interest at 8% and an amortization term of 20 years. Investor provides \$100,000. equity cash. Property is sold 10 years later at a price of \$360,000. reflecting a 10% property value loss. During the ownership term the net income before debt service or recapture averaged \$39,100. per year.

Distribution at Time of Purchase

	<u>Purchase Capital</u>	<u>Income</u>
Mortgage	\$300,000. @ 10.044% (8%-20 yrs)	\$ 30,100.
Equity	<u>100,000.</u> (9% Dividend)	<u>9,000.</u>
Price	\$400,000.	\$ 39,100.

Montgomery/Graaskamp
19

Distribution at Time of Sale (10 years later)

Mortgage Balance	\$ 206,515.
Equity	<u>153,495.</u>
Selling Price	\$ 360,000.

Gibbons
5

MORTGAGE-EQUITY METHOD

Overall Capitalization Rate

$$\frac{\$ 39,100.}{\$400,000.} = .09775$$

Rate Synthesis

$$75\% \text{ Mortgage (8\%-20 yrs.) @ } .10044 = .07533$$

$$25\% \text{ Equity @ Dividend Rate of } .09 = \underline{.0225}$$

$$\text{Overall Rate} = .09783$$

(Difference between .09775 and .09783 due to rounding)

Rate - Ellwood

$$R = y - mc + \text{dep } 1/s \bar{n}$$

$$R = .12 - .75 \times .0373 \text{ (8\%-20 yrs.)} + .10 \times .0570$$

$$R = .12 - .027975 + .00570$$

$$R = .097725$$

PROOF

Equity Income - \$9,000. per year

Equity Reversion - \$153,495. per year

Inwood Annuity Coefficient (12% - 10 years) = 5.650222

Reversion Factor (12% - 10 years) = .321973

$$\$ 9,000. \times 5.650222 = \$ 50,852.$$

$$\$153,495. \times .321973 = \underline{\$ 49,421.}$$

P.W. of Equity Investment \$ 100,273. rounded to \$100,000.

Gibbons

6

COMPETITION FOR CAPITAL

- THE CONCEPT OF OPPORTUNITY COSTS:

- EVERYTHING (INCLUDING \$) HAS A COST IN TERMS OF OPPORTUNITY COSTS FOREGONE
- RESOURCES (INCLUDING \$) ARE SCARCE, AND ONCE A DECISION IS MADE TO USE THEM FOR ONE PURPOSE, THEY ARE NO LONGER AVAILABLE FOR ANOTHER
- HOW DO YOU USE MONEY, PEOPLE, TECHNOLOGY TO GET THE BEST POSSIBLE (OPTIMUM) RESULTS

CAPITAL GIVES ITS HOLDER A WIDE ARRAY OF CHOICES - WHAT IS THE MOST EFFECTIVE MEANS OF EMPLOYING CAPITAL, PARTICULARLY IN A TIME OF TIGHTER MONEY

- AN INVESTOR HAS:

- A LIMITED AMOUNT OF CAPITAL
- AN UNLIMITED ARRAY OF INVESTMENT OPPORTUNITIES

- THE SPECTRUM (MULTITUDE) OF INVESTMENT CHOICES OPEN TO AN INVESTOR (i.e., INDIVIDUAL, INSTITUTION, ETC.)

- NON-REAL ESTATE INVESTMENT OPPORTUNITIES
- REAL ESTATE ORIENTED INVESTMENT OPPORTUNITIES

TIME VALUE OF MONEY

IT HAS TO DO WITH:

(1) COMPOUND INTEREST TABLES

(a) GROWTH -- A DOLLAR TODAY SHOULD HAVE POTENTIALLY GREATER WORTH A YEAR HENCE, THE INCREMENT BEING ITS RETURN

(b) DISCOUNT -- A BIRD IN HAND MAY BE WORTH TWO IN THE BUSH

-- THE MANIPULATION OF A SUM OR SUMS OF MONEY OVER TIME BASED ON DIFFERENT COMPOUNDING OR DISCOUNTING ASSUMPTIONS

(2) TRUE COST OF MONEY

-- LEVERAGE

-- INFLATION

-- INTEREST DEDUCTION

(3) WHAT RATE OF RETURN DO YOU EXPECT ON YOUR CAPITAL

-- BEFORE TAXES/AFTER TAXES

TIME VALUE OF MONEY (cont'd)

(4) TIMING AND ANTICIPATION

- WHAT HAPPENS TO THE INJECTION OF 1\$ TODAY
OVER TIME?

- IN AN UNCERTAIN WORLD, HOW FAST DO THE 'HARD'
DOLLARS COME BACK?

- CAPITAL EXPENDED TO CREATE ASSETS HAS TO BE
CARRIED

CONCLUSION

- AVAILABLE CAPITAL IS A MUCH SOUGHT AFTER AGENT IN
PRODUCTION TODAY

- ITS VALUE TODAY IS MEASURED IN THE CONTRIBUTION IT
CAN MAKE TO SOMETHING OVER TIME

ROI ANALYSIS AND PRESENT WORTH COMPARISONS

(1) WHAT CANDIDATES ARE THERE FOR (INVESTMENT) CAPITAL?

- GET IN LINE, AND GO UP FRONT IF YOU CAN

- SUPPLY OF CAPITAL IS LIMITED, SO NOT ALL PROPOSALS CAN BE ACCEPTED

- EVERYTHING HAS A COST IN TERMS OF OPPORTUNITIES FOREGONE

(2) WHICH SHOULD RECEIVE PREFERENCE?

- THE INCREASING COMPLEXITY OF THE VARIOUS TYPES OF INVESTMENT OPPORTUNITIES SUGGEST THE NEED FOR A COMMON MEASURE

- THE BENEFITS, AS WELL AS THE DOLLAR OUTLAYS, CAN BE ESTIMATED AND EXPRESSED IN DOLLARS, AFTER DEDUCTING FROM THEM THE ASSOCIATED TAX BENEFITS

- INVESTMENTS CAN BE RANKED ACCORDING TO SOME COMMON MEASURES, AND A RANKING OR CUT-OFF POINT WILL GUIDE ACCEPTANCE OR REJECTION

ROI - MORTGAGE ON INCOME PROPERTY

VARIABLES BUILT INTO PROGRAM

- (1) . AMOUNT
- (2) INTEREST RATE
- (3) TERM
- (4) CLOSING DATE
- (5) PAY-OFF DATE
- (6) PREPAYMENT PENALTY
- (7) RETAINED SERVICE FEE
- (8) BASE RENT
- (9) VACANCY
- (10) ANNUAL RENT INCREASE
- (11) TYPE KICKER

WHAT'S MISSING?

- (1) ANNUAL MORTGAGE SERVICING CHARGE
- (2)

PROGRAM IS SIMPLE - NOTE THE NUMBER OF VARIABLES

\$4300000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 15.00% OF GROSS INCOME IN EXCESS OF \$758000.00

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
-----	-----	-----	-----	-----	-----
9/ 1/71	174687.19	0.0	6823.75	181510.94	4300000.00
9/ 1/72	415541.06	84458.44	17731.94	517731.44	4215537.00
9/ 1/73	406927.87	93071.81	20983.80	520983.44	4122460.00
9/ 1/74	397436.06	102563.56	24235.73	524235.31	4019890.00
9/ 1/75	386976.19	113023.31	27487.68	527487.17	3906860.00
9/ 1/76	375449.75	124549.87	30739.62	530739.25	3782303.60
9/ 1/77	362747.87	137251.62	33991.57	533991.06	3645046.00
9/ 1/78	348750.81	151248.81	37243.45	537243.06	3493791.00
9/ 1/79	333326.37	166673.25	40495.39	540495.00	3327114.00
9/ 1/80	316329.06	183670.50	43747.33	543746.87	3143438.00
9/ 1/81	297598.06	3143451.00	46999.25	3488028.00	0.0
	3815767.00	4299942.00	330479.37	8446189.00	

PART'N	ROI
-----	---
330479.37	<u>11.05%</u>

\$4300000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 2.00% OF GROSS INCOME

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
9/ 1/71	174687.19	0.0	7226.49	181913.62	4300000.00
9/ 1/72	415541.06	84458.44	17524.23	517523.69	4215537.00
9/ 1/73	406927.87	93071.81	17957.80	517957.44	4122460.00
9/ 1/74	397436.06	102563.56	18391.41	518391.00	4019890.00
9/ 1/75	386976.19	113023.31	18825.04	518824.50	3906860.00
9/ 1/76	375449.75	124549.87	19258.59	519258.19	3782303.00
9/ 1/77	362747.87	137251.62	19692.16	519691.62	3645040.00
9/ 1/78	348750.81	151248.81	20125.76	520125.37	3493791.00
9/ 1/79	333326.37	166673.25	20559.39	520559.00	3327114.00
9/ 1/80	316329.06	183670.50	20992.96	520992.50	3143432.00
9/ 1/81	297598.06	3143431.00	21426.51	3462455.00	0.00
	3815767.00	4299942.00	201980.19	8317689.00	

PART'N	ROI
201980.19	<u>10.73%</u>

\$4300000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 25.00% OF GROSS INCOME ABOVE \$894000.00

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
9/ 1/71	174687.19	0.0	0.0	174687.19	4300000.00
9/ 1/72	415541.06	84458.44	0.0	499999.50	4215537.00
9/ 1/73	406927.87	95071.81	1722.75	501722.37	4122460.00
9/ 1/74	397436.06	102563.56	6392.89	506392.50	4019890.00
9/ 1/75	386976.19	113023.31	11812.76	511812.25	3906860.00
9/ 1/76	375449.75	124549.87	17232.65	517232.25	3782303.00
9/ 1/77	362747.87	137251.62	22652.50	522652.00	3645046.00
9/ 1/78	348750.81	151248.81	28072.40	528072.00	3493791.00
9/ 1/79	333326.37	166673.25	33492.30	533491.87	3327114.00
9/ 1/80	316329.06	183670.50	38912.24	538911.75	3143438.00
9/ 1/81	297598.06	3143431.00	44332.08	3485361.00	0.0
	3815767.00	4299942.00	204622.50	8320332.00	

PART'N	ROI
-----	---
204622.50	<u>10.67%</u>

COMPUTER TECHNIQUES IN GENERAL

UNDERSTAND THE FORM OF ANY PROGRAM

- VALIDITY OF THE PROGRAM VARIABLES

- WHAT'S MISSING?

- NO NONSENSE FORTIFIED WITH TECHNICALITIES

UNDERSTAND THE VARIOUS KINDS OF DATA USED AND THE ASSUMPTIONS FOR INJECTION OVER TIME

- THE QUALITY OF THE DATA PUMPED IN - WHEN?

- "GARBAGE IN/GARBAGE OUT"

DON'T BE RIDICULOUS

DON'T BECOME MESMERIZED NOR OVERWHELMED BY THE COLUMNS OF PRINTOUT STATISTICS

DON'T BE INTIMIDATED BY A GLORIFIED ADDING MACHINE, THAT REACTS LIKE A SLAVE

USEFUL FOR:

- (1) MEASURING THE BENEFITS OF VARIOUS INVESTMENT OPPORTUNITIES

- (2) ANALYTIC AND NEGOTIATION PURPOSES

- (3) MANAGEMENT DECISION/ALTERNATIVE INVESTMENT EVALUATION

- (4) DISCIPLINE OF TRACING 1\$ OVER TIME

Letter to Members

NOT FOR PUBLICATION



REFER TO:

RETURN TO:

March 10, 1971
.13-71

JOINT VENTURING AND EQUITY INVESTMENT

YES, Virginia, JOINT VENTURING is still alive and thriving in the U. S. A. today! AND--the whole scope of EQUITY INVESTMENT has even become a part of the real estate finance nomenclature. We'll talk about these things in a series of four two-day seminars across country:

- April 1-2-----New York, New York
- May 6-7-----Atlanta, Georgia
- May 20-21-----Chicago, Illinois
- August 11-12----San Francisco, California

Attendees will hear about--and discuss--such pertinent questions as.....

-initiating the project
-who is involved
-who finances what
-equitable fee structures
-what is a valid joint venture agreement
-how does the project get developed and managed
-how does one analyze real return on investment
-income property analysis by computer
-when and how to dispose of a project
-the techniques of "hardnosed" negotiating

*Answer
- Pros Return
Tom
65*

It's all there! Simply complete and return the enclosed registration form. Incidentally, why not bring several of your employees, as kind of a "joint venture."

Sincerely,

Lewis O. Kerwood
Senior Director

LOK/meh
Enclosure

**JOINT VENTURE AND EQUITY
INVESTMENT SEMINAR**

April 1-2, 1971
Americana Hotel
New York, New York

May 6-7, 1971
Executive Park Motor Hotel
Atlanta, Georgia

May 20-21, 1971
The LaSalle Hotel
Chicago, Illinois

August 11-12, 1971
St. Francis Hotel
San Francisco, California

*Sponsored
by the*
**Conventional Loan Committee
Mortgage Bankers Association of America**



PROGRAM

FIRST DAY

- 8:30-9:00 A.M. REGISTRATION
9:00-9:15 A.M. ORIENTATION TO THE SEMINAR

Lewis O. Kerwood, Senior Director,
Mortgage Bankers Association of America,
Washington, D. C.
(N. Y., Chi.)

Marshall W. Dennis, Assistant Director
of Education and Training,
Mortgage Bankers Association of America,
Washington, D. C.
(Atl., S. F.)

1:15 A.M.-4:00 P.M.

JOINT VENTURING

Moderator: Sam E. Miles, Jr.

How Do All The Parties Get Involved

- Where does the idea germinate?
- How do we get started and who takes the initiative?
- Qualifying both the investor and the developer
- Who finances what?
- Fee structures
- The institutional lender looks at the partnership vehicle
- The correspondent looks at the partnership vehicle

Sam E. Miles, Jr., Vice President,
Provident Life and Accident Insurance
Company, Chattanooga, Tennessee
(all locations)

(speaker to be selected)
(all locations)

Constituting The Joint Venture Agreement—
In Detail And In Fact

- a. Provisions of the Joint Venture agreement and the legal framework of limited and general partnerships
- b. Forms of the Joint Venture
- c. Advantages-Disadvantages of the partnership
- d. Tax considerations
(speaker to be selected)
(All locations)

Facilitating The Project Development

- a. The developer looks at the partnership
- b. Bring the project to fruition
- c. Problems of cash flow and distribution to developers and subcontractors

Robert T. Foley, President,
Robert T. Foley Company,
Washington, D. C.
(N. Y., Chi., S. F.)

James M. Crawford, Jr., General Manager,
Fifteenth Street Holding Company,
Atlanta, Georgia
(Atl.)

Managing The Enterprise

- a. Tenant selection and lease negotiation
- b. Maintenance of the physical property
- c. Day-to-day financial transactions

Robert T. Foley
(N. Y., Chi., S. F.)
James M. Crawford, Jr.
(Atl.)

Disposition

- a. If
- b. Why
- c. When
- d. How
- e. Who

(speaker to be selected)
(All locations)

Face - To - Face
(Hardnose Negotiating)

Referee: Alan B. Ives, Senior Vice President,
Associated Mortgage Companies, Inc.
Camden, New Jersey (N. Y.)
Lewis O. Kerwood, (Chi.)
Marshall W. Dennis, (Atl., S. F.)

Contestants: Sam E. Miles, Jr., (all locations)
Robert T. Foley, (N.Y., Chi., S. F.)



J. T. Montgomery, Second Vice
President, Travelers Insurance
Company, Hartford, Connecticut (all locations)



James M. Crawford, Jr., (Atl.)
(additional speaker to be announced)

SECOND DAY

SOPHISTICATED INVESTMENT ANALYSIS

- a. Return on Investment Analysis
J. T. Montgomery, (all locations)
- b. Income Property Analysis—Emphasizing
Computer Techniques

 Dr. Karel Joseph Clettenberg,
Assistant Professor of Real Estate,
Graduate School of Business,
University of Wisconsin,
Madison, Wisconsin (N. Y., Atl.) 

 Dr. James A. Graaskamp,
Associate Professor of Real Estate,
Graduate School of Business,
University of Wisconsin,
Madison, Wisconsin (Chi., S. F.) 

NOTE: Luncheon will be served at all locations each day from 12:30 until 2:00.

(All speakers do not attend all sessions. The cities they will appear at are in parentheses following their names).

SOPHISTICATED INVESTMENT ANALYSIS SEMINAR

Mortgage Bankers Association of America

New York, Atlanta, Chicago, San Francisco

2nd Day's Targets - (9:00 - 12:30)

- I. What motivates investors to do the things they do?
 - All kinds of Investors
 - Real Estate Investors
 - Montgomery

- II. Basic Real Estate Accounting and Terminology - Montgomery

- III. Introduction to ROI Analysis - Montgomery

- IV. How do you analyze and forecast the benefits and value of a real estate investment interest via computer techniques?
 - Cash forecasting and after - tax Real Estate Investment analysis
 - Grasskamp or Clettenberg

I. What motivates investors to do the things
they do? - generally -

- Define Investor broadly - *everybody that has or has
Capital to invest in anything*

- Different Objectives and Goals

What are some of the things any kind of investor considers,
either unconsciously or very formally, individuals or
institutions.

- (A) Concept of the Ideal Investment
- (B) Concept of Opportunity Cost
- (C) Concept called Competition for Capital
- (D) Concept called Time Value of Money
- (E) Concept called Present Worth Comparisons
- (F) Concept called Return on Investment Analysis

A. Concept of the "Ideal Investment"

- any kind/find me one!

- no such thing - the impossible dream

- concept is not academic, however - forms the basis or departure point of what motivates investors of all kinds to do the things they do

- What would the "ideal investment" include:
 - (1) absolute security of principal
 - certainty of pay back or pay off

 - (2) capital appreciation potential
 - hedge against inflation and real growth potential

 - (3) the ability to liquidate (sell) the investment instantaneously
 - market appealing denomination and duration characteristics

 - (4) clock-like payments of very high interest - no collection problems

 - (5) carefree investment - *net, net, net, lease*
 - no management nor other expense offsets
 - nuisance free

 - (6) available as easy collateral

 - (7) complete tax shelter from all kinds of taxes

 - (8) unlimited leverage potential

B. The Concept of Opportunity Costs

- Capital gives its holder a wide array of choices

- By capital, it is meant:
 - (1) - cash, its equivalent, and the ability to borrow

 - (2) - equity capital, debt capital, etc.

- The spectrum of choices open to an investor is unlimited
(instructor comment)
 - non real estate investment opportunities

 - real estate oriented investments

- No matter how large, any investor has a limited amount of capital (including access to credit) and an unlimited array of investment opportunities.

- Everything (including \$) has a cost in terms of opportunity costs foregone.

- Resources (including \$) are scarce, and once a decision is made to use them for one purpose, they are no longer available for another.

- (one opportunity cost to you of taking this course, is the fact that you could have been someplace else doing something else.)

C. Concept called "Competition for Capital"

- What candidates are there for (my) investment capital?

- (My) available capital is a much sought after agent in production

- There are unlimited positions I can invest in:
 - real estate/non-real estate

 - debt/equity

 - name a few thousand

- The supply of (my) capital is limited (including ability to borrow), and only a few investment proposals can be accepted

- What do you have to offer? - Get in line, and get up front if you can

- Every investment I make has a cost to me in terms of other investment opportunities foregone

D. Concept called the "time value of money (capital)"

- difficult to define directly
- capital has a time dimension - the value of capital today is measured in the contribution it can make to something over time (in the future)
- The concept has to do with:
 - (1) Compound Interest Tables - the manipulation of a sum or sums of money over time based on different compounding or discounting assumptions
 - (a) Growth - a \$ today should have potentially greater value in the future, the increment being its return
 - (b) Discount - "a bird in hand may be worth several in the bush (future)"

Effective

- (2) True Cost of Money - the real cost of money (capital) can be a very allusive thing

- the impact of:

- (a) leverage
- (b) inflation - soft money/hard money
- (c) income tax considerations - after tax dollars

- (3) Timing and Anticipation

- What happens to the injection today of \$1 of either debt or equity capital over time?
- in an uncertain world, how fast does an investor recapture his \$1?
- any kind of capital expended to create (real estate) assets has to be carried - to the extent the asset cannot be converted into income (thru sales, rentals, etc.), it has to be carried and can become a capital drain.

E. Present Worth Comparison (the heart of the valuation process)

- Value has been defined as the present worth of all future benefits,
- This is a true statement/most important statement in first hour
- What does this mean?
 - (1) Define the future benefits of any kind of investment opportunity - what are all the benefits?
 - (2) When and how often do the future (events) benefits occur? - each one, that is!
 - (3) Compound interest discount factors provide for what? (return on and recapture of)
 - (4) What interest rate do you use to discount any future benefit to present worth
 - Where did you get it from?/how long will rate persist?
 - At what rate can receipts be reinvested?/
how quickly can receipts be reinvested?
 - (5) Demonstrate the power of compound interest over longer time spans (change the interest rate 1% and trace results over time)
 - (6) Sounds easy - the difference between the easy words and the limping deeds
 - the reverse side of the coin called ROI analysis
 - How many dollars (equity and debt \$) do I pay out for an investment position?

equity

I. What motivates a real estate investor to do the things he does?

- What are the unique characteristics of a real estate equity investment (say on an existing apartment house) as compared generally to other kinds of unrelated investments?

(A) An ability to leverage a sometimes mediocre net operating income stream thru financing of all kinds

(B) An ability to shelter part or all of the annual cash throw off from the payment of income taxes

(C) An opportunity to look forward to a "bonus" down the road if your judgments are sound and the times are generally good

(b)

A. LEVERAGE

At the right of leverage

- "USING OTHER PEOPLE'S MONEY, TO MAKE A LESSER AMOUNT OF YOUR OWN
WORK HARDER"

- "THE ADVANTAGE GAINED BY EARNING MORE ON CAPITAL THAN IT COSTS Effectively
TO BORROW IT"

- "CONTROLLING THE MOST AMOUNT OF PROPERTY, WITH THE LEAST AMOUNT
OF MONEY"

- MOST INVESTORS INSIST ON HAVING ACCEPTABLE FINANCING BEFORE
THEY WILL BUY

- THE AVAILABILITY AND TERMS OF FINANCING AFFECT THE VALUE OF
ANY INVESTMENT POSITION

THE ANNUAL MORTGAGE CONSTANT

THE GAME PLAN:

- (1) MAXIMUM FINANCING
- (2) ... LOWEST POSSIBLE ANNUAL CONSTANT
- (3) MAXIMIZE INTEREST PORTION OF CONSTANT

THE MOTIVATION

- (1) INTEREST TAX DEDUCTIBLE
- (2) AMORTIZATION IS NOT
- (3) MAXIMIZE BOTTOM LINE FIGURE
- (4) TRUE COST OF BORROWING
- (5) SOFT MONEY

(B.)

TAX DEPRECIATION

- WHENEVER YOU MAKE A CAPITAL INVESTMENT WHICH WILL LIVE MORE THAN ONE TAX YEAR, IT BECOMES A PREPAID CAPITAL EXPENSE

- TAX DEPRECIATION HAS TO DO WITH THE ALLOCATION OF THIS PREPAID CAPITAL EXPENSE OVER THE USEFUL LIFE OF THE CAPITAL INVESTMENT

USEFUL LIFE

- (1) IRS GUIDE LINES

- (2) IRS RULINGS

- (3) COURT DECISIONS

TAX DEPRECIATION

- IT IS A BOOKKEEPING CHARGE ONLY

- IT DOES NOT REQUIRE AN ACTUAL OUTLAY OF CASH

- IT IS, HOWEVER, A DEDUCTIBLE EXPENSE FOR THE PURPOSE OF INCOME TAX CALCULATION

- IT ACTS TO REDUCE INCOME ON WHICH INCOME TAXES ARE PAID

- IT ACTS TO REDUCE INCOME TAX, OR RETAIN INCOME TAX THAT WOULD OTHERWISE HAVE TO BE DISBURSED

- IT ACTS TO INCREASE WHAT'S LEFT OVER ON THE VERY BOTTOM LINE

TAX DEPRECIATION

INVESTOR MOTIVATION:

- (1) A SHIFT AWAY FROM S.L. SPEEDS UP DEPRECIATION AND TAX SHELTER IN THE EARLY YEARS
- (2) DEPRECIATION FIGURES CHANGE TAX SITUATIONS
- (3) MAXIMIZATION OF AFTER TAX CASH FLOW
- (4) THE "PIPER HAS TO BE PAID"
- TAX SHELTER RUNS OUT

EFFECTS OF TAX DEPRECIATION AND LEVERAGE

CHRONOLOGY OF THINGS:

- STAGE 1 - EXCESS TAX SHELTER
- STAGE 2 - COMPLETE TAX SHELTER
- STAGE 3 - MINIMAL INCOME TAX PAYMENT
- STAGE 4 - LOTS OF INCOME TAX PAYMENT
- STAGE 5 - OUCH AND OUT!

LEVERAGE <> TAX DEPRECIATION

- (1) TAX DEPRECIATION BASED ON TOTAL COST OF THE
IMPROVEMENT

- (2) TAKES INTO ACCOUNT BOTH INVESTOR'S EQUITY AND
ANY MORTGAGE DEBT

- (3) INVESTOR GETS TAX DEPRECIATION BENEFIT OF MORTGAGEE'S
INVESTMENT

- (4) INCREASE INVESTOR'S HARD DOLLAR EQUITY WITH TAX
FREE FUNDS

C. SOURCES OF EQUITY APPRECIATION - THE "BONUS" OR "RESIDUAL"

(1) MORTGAGE AMORTIZATION

(2) INFLATION

(3) JUDGMENT

- WHAT TO BUY
- WHAT TO PAY
- WHEN TO SELL

(4) SYNERGY THRU CREATIVE ENTERPRISE

- COMBINING BRICKS AND MORTAR ON TOP OF LAND TO PRODUCE AN ASSET WHOSE VALUE IMMEDIATELY IS GREATER THAN THE COST OF THE COMPONENTS
- 1 PART LAND + 3 PARTS BLDG. = 5 PARTS VALUE
- THEN BORROW 4 PARTS

CASHING IN

(1) A MORTGAGE REFINANCE

(2) A SALE OR EXCHANGE

(3) A COMBINATION OF BOTH

~~(Standard Hand-Out)~~

II,

Real Estate Labels and Accounting Oversimplified

350,000
17,500.00

Gross Income	\$60,000	
Vacancy Allowance	<u>3,000</u>	
Effective Gross Income	57,000	
Operating Expenses	<u>17,900</u>	
<u>Net Income</u> (R=9.775%)	39,100	(A)
Debt Service (S= 10.44%)	<u>30,100</u>	
<u>Equity Dividend</u> (9%)	9,000	+ (B)
Income - Tax Payment	<u>3,000</u>	
<u>After-Tax Cash Flow</u>	6,000	(C)

+6000

(Tax Savings on other Income - D)

2500
500

The Search for the Uniform Label

(A) Net Income

alias - Net Operating Income

- Net Income before Capital Recapture

- Net Income to Land and Building before
Capital Recapture

- Average Net Income

(B) Equity Dividend

alias - Cash Flow Dividend

- Cash Throw Off
- Before-Tax Cash Flow
- Return on Equity before Income Taxes
- Gross Spendable Income

(C) After-Tax Cash Flow

alias - Net Cash Flow

- Net Spendable Income
- The bottom line figure

(D) Tax Savings on Other Income (~~Instructor should not spend much time on this point at this stage in Course IB~~)

- no income tax due, because tax deductions (i.e., operating expenses paid, mortgage interest, tax depreciation) are more than enough to completely shelter Equity Dividend (not so in example)
- Excess tax shelter remains (property shows an operating profit but a tax accounting loss)
- Excess tax shelter from subject property used to shelter income from some other source of unrelated taxable income
- (\$5,000, say, of excess tax shelter from subject property would represent \$2,500 of tax saving on other income to an investor in a 50% tax bracket - excess tax shelter does not exist in subject problem)

DEDUCTIONS FOR PURPOSES OF CALCULATING INCOME TAX PAYMENT (REMEMBER,
THE PROPERTY DOES NOT PAY INCOME TAXES, THE INVESTOR DOES)

- (1) ALL ACTUAL OPERATING COSTS PAID
 - EXCLUDES ADDITIONS TO CAPITAL
 - EXCLUDES APPRAISER'S RESERVES FOR REPLACEMENTS

- (2) TAX DEPRECIATION (A BOOKKEEPING CHARGE) ON IMPROVEMENTS AND PERSONALTY

- (3) MORTGAGE INTEREST (NOT MORTGAGE AMORTIZATION)

- (4) GROUND RENTS, IF ANY

- (5) START UP TAX LOSS CARRY FORWARDS NOT CAPITALIZED

- (6) EXCESS TAX SHELTER (FROM ~~SUBJECT PROPERTY~~ OR SOME OTHER UNRELATED PROPERTY)

- (7) WHAT HAVE I MISSED?

REAL ESTATE ACCOUNTING

- POSITIVE ACCOUNTING PROFITS MEAN HIGHER INCOME TAX PAYMENTS AND ARE THEREBY TO BE AVOIDED
 - NEGATIVE REPORTED ACCOUNTING EARNINGS ARE THE GOAL
 - THE GAME PLAN IS TO SHOW OPERATING PROFITS AT THE SAME TIME SHOWING INCOME TAX LOSSES
 - BUT THE EFFECT ON CORPORATE EARNINGS
-

THE 4 KINDS OF MONEY

- PRINCIPAL MONEY
 - INTEREST MONEY
 - HARD MONEY
 - SOFT MONEY
-
- TODAY'S MOST IMPORTANT DISTINCTION IN THE INVESTMENT WORLD
 - DOES IT TAKE HARD DOLLARS OR SOFT DOLLARS TO OBTAIN AN INVESTMENT POSITION?

III. The concept of "Return on Investment Analysis"

(1) ROI Analysis (the heart of the investment process)

- As an investor, what alternatives do I have to invest capital?
- Investment opportunities of all sorts have become increasingly complex
- The need for a common measure (ROI) - the benefits, as well as the dollar outlays, can be estimated and expressed in dollars.
- Alternative investment opportunities can be ranked according to some common measure (ROI), and a ranking or cut-off point will guide acceptance or rejection.
- Get in line, and get up front if you can

Structure of all ROI Analysis:

- (1) Estimates of future cash flows (revenues, expenses, etc.)
 - data input
- (2) Financial analysis (options, residuals, taxes, etc.)
- (3) ROI calculations - overall annual yields
- (4) Presentation and interpretation of results for investment decision making
 - (a) Expected Return - with and without capital appreciation - before and after taxes
 - (b) Risk analysis - downside/upside - anybody who invests may lose
 - (c) Timing assumptions - pessimistic to optimistic

-Roi Analysis lends itself to computer programming and application

ROI - MORTGAGE ON INCOME PROPERTY

VARIABLES BUILT INTO PROGRAM

- (1) AMOUNT
- (2) INTEREST RATE
- (3) TERM
- (4) CLOSING DATE
- (5) PAY-OFF DATE
- (6) PREPAYMENT PENALTY
- (7) RETAINED SERVICE FEE
- (8) BASE RENT
- (9) VACANCY
- (10) ANNUAL RENT INCREASE
- (11) TYPE KICKER

WHAT'S MISSING?

- (1) ANNUAL MORTGAGE SERVICING CHARGE
- (2) ?

PROGRAM IS SIMPLE -- NOTE THE NUMBER OF VARIABLES

\$4300000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 15.00% OF GROSS INCOME IN EXCESS OF \$758000.00

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
-----	-----	-----	-----	-----	-----
9/ 1/71	174687.19	0.0	6823.75	181510.94	4300000.00
9/ 1/72	415541.06	84458.44	17731.94	517731.44	4215537.00
9/ 1/73	406927.87	93071.81	20983.80	520983.44	4122460.00
9/ 1/74	397436.06	102563.56	24235.73	524235.31	4019890.00
9/ 1/75	386976.19	113023.31	27487.68	527487.12	3906860.00
9/ 1/76	375449.75	124549.87	30739.62	530739.25	3782303.00
9/ 1/77	362747.87	137251.62	33991.57	533991.06	3645046.00
9/ 1/78	348750.81	151248.81	37243.45	537243.06	3493791.00
9/ 1/79	333326.37	166673.25	40495.39	540495.00	3327114.00
9/ 1/80	316329.06	183670.50	43747.33	543746.87	3143438.00
9/ 1/81	297598.06	3143431.00	46999.25	3488028.00	0.0
	3815767.00	4299942.00	330479.37	8446189.00	

PART'N ROI
 ----- ---
 330479.37 11.05%

\$4300000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 2.00% OF GROSS INCOME

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
9/ 1/71	174687.19	0.0	7226.49	181913.62	4300000.00
9/ 1/72	415541.06	84458.44	17524.23	517523.69	4215537.00
9/ 1/73	406927.87	95071.81	17957.80	517957.44	4122460.00
9/ 1/74	397436.06	102563.56	18391.41	518391.00	4019890.00
9/ 1/75	386976.19	113023.31	18825.64	518824.50	3908860.00
9/ 1/76	375449.75	124549.87	19258.59	519258.39	3782303.00
9/ 1/77	362747.87	137251.62	19692.16	519691.62	3645046.00
9/ 1/78	348750.81	151248.81	20125.76	520125.37	3493791.00
9/ 1/79	333326.37	166673.25	20559.39	520559.00	3327114.00
9/ 1/80	316329.06	183670.50	20992.96	520992.50	3143432.00
9/ 1/81	297598.06	3143431.00	21426.51	3462455.00	0.0
	3815767.00	4299942.00	201980.19	8317689.00	

PART'N

ROI

201980.19

10.78%

Montgomery/Graaskamp

\$4500000.00 LOAN, 9.75% PAYABLE MONTHLY, TERM 25 YEARS
 CLOSING DATE 4/ 1/71, PAID OFF 9/ 1/81, PREPAYMENT PENALTY 3.00%
 RETAINED SERVICE CHARGE \$10000.00 BASE RENTAL \$894000.00
 VACANCY RATE 3.00%, RENT INCREASE 2.50%/YEAR(SIMPLE)
 KICKER PAYABLE MONTHLY, KICKER TYPE:
 25.00% OF GROSS INCOME ABOVE \$894000.00

PERIOD	INTEREST	PRINCIPAL	PART'N	TOTAL	O/S BALANCE
9/ 1/71	174687.19	0.0	0.0	174687.19	4500000.00
9/ 1/72	415541.06	84458.44	0.0	499999.50	4215337.00
9/ 1/73	406927.87	95071.81	1722.75	501722.37	4122460.00
9/ 1/74	397436.06	102563.56	6392.89	506392.50	4019890.00
9/ 1/75	386976.19	113023.31	11812.76	511812.25	3906860.00
9/ 1/76	375449.75	124549.87	17232.65	517232.25	3782303.00
9/ 1/77	362747.87	137251.62	22652.59	522652.06	3645046.00
9/ 1/78	348750.81	151248.81	28072.40	528072.00	3493791.00
9/ 1/79	333326.37	166673.25	33492.30	533491.87	3327114.00
9/ 1/80	316329.06	183670.50	38912.24	538911.75	3143438.00
9/ 1/81	297598.06	3143431.00	44332.08	3485361.00	0.0
	3815767.00	4299942.00	204622.50	8320332.00	

PART'N ROI
 ----- ---
 204622.50 10.67%

COMPUTER TECHNIQUES IN GENERAL

UNDERSTAND THE FORM OF ANY PROGRAM

- VALIDITY OF THE PROGRAM VARIABLES

- WHAT'S MISSING?

- NO NONSENSE FORTIFIED WITH TECHNICALITIES

UNDERSTAND THE VARIOUS KINDS OF DATA USED AND THE ASSUMPTIONS FOR INJECTION OVER TIME

- THE QUALITY OF THE DATA PUMPED IN - WHEN?

- "GARBAGE IN/GARBAGE OUT"

DON'T BE RIDICULOUS

DON'T BECOME MESMERIZED NOR OVERWHELMED BY THE COLUMNS OF PRINTOUT STATISTICS

DON'T BE INTIMIDATED BY A GLORIFIED ADDING MACHINE, THAT REACTS LIKE A SLAVE

USEFUL FOR:

- (1) MEASURING THE BENEFITS OF VARIOUS INVESTMENT OPPORTUNITIES

- (2) ANALYTIC AND NEGOTIATION PURPOSES

- (3) MANAGEMENT DECISION/ALTERNATIVE INVESTMENT EVALUATION

- (4) DISCIPLINE OF TRACING 1\$ OVER TIME

COMPUTER TECHNIQUES TO AID
CASH FORECASTING AND AFTER-TAX REAL ESTATE INVESTMENT ANALYSIS

Introduction

It is widely held that the investment value of any income-producing capital asset is the present value of the net income to be generated. This has been generally true since the days of Alfred Marshall and Irving Fisher.¹

Frederick Babcock went so far as to maintain that there was only one method of valuing real estate, the discounting of building returns extended to perpetuity with capitalization rates determined in the market.² The basic concept of Income/Capitalization Rate equals Value has become a truism for income property appraisal, but the appropriate application of this concept is a matter of considerable debate when forecasting sale price.³

The purpose of this article is to suggest how an available computer service can actually apply the theory of the income approach to value to modern real estate investment counseling and appraisal assignments. Because the system relies on a combination of market rents, historical costs, and a present value discounting of returns, it is also possible to comment on the controversial need to use and correlate three approaches to value.

Redirection of income theory

Over the years the definition of Income has evolved from a simple average annual net income over the full useful life of the investment to a mixed return of periodic incomes and singular reversions, and

most recently, to a further division of returns between vested mortgage interests and equity interests.⁴ Concurrently, Capitalization Rate has evolved from a simple straight line concept to elaborate composite, Hoskold, Inwood, or Ellwood configurations. Each refinement has attempted to provide a more realistic allocation of proceeds among cash dividends, mortgage payments, and capital recapture.⁵

In these refinements concern with methodology gradually obscured original present value theory. One school of thought, with its roots in Babcock, seeks an "overall market rate" by analyzing market sales of properties producing known net incomes. However, a cap rate determined by the ratio of income to sale price is nothing more than the reciprocal of a price/earnings ratio, such as used in the stock market. A "market rate" of .085 means a price/earnings ratio of 12, a more accurate representation of market price comparisons than is possible with its cousin, the gross rent multiplier. Insurance companies and banks frequently determine loan value basis as some multiple of a normalized or average net income expectation. For smaller income properties the market may well operate on net income multipliers.⁶ A multiplier is a market comparison approach and not specifically a present value factor, however.

Another approach to cap rate, such as the Ellwood method present value annuity, would construct a factor as a function of loan ratio, interest rate, mortgage term, equity yield, and depreciation. A single composite discount rate requires that Income in the present value equation be constant at an average figure. Any leveling or averaging of income to achieve conformity with the single variable truism $I/C = V$ does

violence to the proposition that present dollars are worth more than future dollars and avoids the need to place returns to investor in specific time periods. All of the scholarly concern with the Capitalization Rate misses the point that the income received by the investor is uneven and erratic in amount and of differing investment quality due to varying degrees of penetration in income taxes on these receipts. Nonetheless, the income schedule, not the capitalization rate, is the root of all value.

Therefore, the basic proposition of this essay is that, if the income approach to value is to be salvaged as an appraisal tool, then attention must be redirected to the problems of:

1. Redefinition of the income returns to the investor.
2. Placement of returns in specific periods of time.
3. Accounting for each type of return to reflect exposure to income tax confiscation.
4. Reliance on simple, compound-interest, reversion discounts only rather than all-encompassing fictional annuity factors.
5. Redirection of appraisal methodology to reflect investor logic and motivation.

Redefinition of income returns

It must be recognized by now that the productivity of any real estate investment is not only shared between mortgage and equity interests but is also distributed among local governments via real estate taxes and the national government in the form of income taxes. Therefore, if it is acceptable to value returns to equity after debt service, it should be

acceptable to value returns to equity after partnership shares have been taken by local and federal government. The stream of returns, measurable in money terms, received by the beneficiary of certain vested rights in income-producing real estate must therefore be the after-tax spendable cash which he enjoys attributable to the real estate. The investment value of the equity is the present value of after-tax spendable cash from the point in time when the initial commitment of funds is made to the time that the equity commitment is withdrawn through sale, abandonment, or reorganization of the legal entity of ownership. The after-tax cash received in each period is discounted back to the point of initial investment as a simple Inwood reversion, and the series of reversions is then totaled to measure the present value of equity returns. The total investment value of the private vested interests (as contrasted to the public vested interest in real estate and income taxes) is then the present value of the after-tax cash benefits to equity and the present value of payments to the mortgage interests.

After-tax spendable cash in real estate may come to the investor over time from four sources in varying amounts:

1. Positive cash flows remaining from normal operational revenues over successive periods of time.
2. Positive net worth received as proceeds on sale of the property after debt and capital gain tax claims have been paid at a single point in time.
3. Surplus proceeds not subject to tax derived from refinancing

of an existing mortgage balance with a larger loan balance at infrequent points in time.

4. Spendable cash salvaged from other income subject to income taxation unless shielded by tax losses generated from real estate ownership over successive periods of time.

Positive cash flows from operations and spendable cash salvaged from other income each period must be scheduled for the anticipated time sequence. Proceeds from sale or a refinancing must be given assumed but specific calendar dates. In addition cash flow from operations or other income must be permitted to vary in each period of time because, at the very least, interest and depreciation deductions to determine taxable income will vary and over the long run most revenue and expense factors will shift in amount for a variety of reasons.

Month by month determinations of after-tax cash flows is a tedious and repetitious task well suited to the abilities of electronic data processing machines. Indeed, the accurate and extensive accounting required of this method may be a major factor in explaining the willingness of practicing appraisers to accept normalized income for appraisal purposes while paying their own CPA to calculate after-tax cash flow for the appraisers' own real estate investments.

It is recognized that determination of spendable after-tax cash involves assumptions which can be unique to a single investor or characteristic of a class of investors. If these assumptions must always be unique to one taxpayer, then any valuation of after-tax income is appropriate to investment counsel but not to appraisal. But, if certain

assumptions can be modified to reflect probable group behavior, then after-tax benefits are not only benefits to the user but marketable benefit streams appropriate to appraisal consideration. Consequently this study will first describe a valuation model for the investor and then suggest the extension of the method to appraisal.

General structure of an
investment model

Investment models for the computer can be designed to produce alternative results of given actions with measures of the chance of varying degrees of success and failure,⁸ a single result with a stated probable standard error, or a single result which is simply the mechanical and mathematical result of one set of numerical assumptions.⁹ The investment model described in this paper is one of the latter types, a "heuristic model" say the decision theory people, for it runs through a single set of inputs and stops without searching for an optimal solution. Since the combination of alternative inputs is infinite, it is presumed that the analyst has narrowed his choices to a limited set of practical alternatives on the basis of his own judgment and experience. The product of the model is an extension of decisions already made by the investor or appraiser or modified as a result of previous runs on the computer. It lacks the glamour of an optimizing model or decision-making model, but it is doubtful that the art of real estate investment can either be made conclusively mechanistic or would be accepted as such by practitioners if it were. Any model builder must anticipate the resentment any computer system generates among real estate practitioners, and this model deliberately avoids infringing on matters of "judgment."

Reference to the simplified flow chart of inputs and outputs in Figure 1 will suggest the type of input information which presumes an extensive market and cost study by the investor or appraiser prior to bringing all these factors to bear in the valuation process. The gross annual rent roll, current operating expenses and real estate taxes, and the type and terms of financing all require full knowledge of the market if the data provided are to be realistic and are to justify sophisticated analysis. Depreciation assumptions, income tax decisions, and choice of discount rates require explicit choices by the investor or professional analyst. Time index adjustments of each input factor to anticipate changing market, cost, and money factors in future years require an understanding of the dynamics of real estate appropriate to the professional ideals of realtor, appraiser, or counselor. Once the analyst has made these assumptions and communicated these to the machine, the computer simply does the tedious arithmetic to produce the annual summaries of operations computed monthly as outlined in the box of Figure 1 designated "cash flow data printouts." The teaching model which follows is one of a family of alternative programs which each follow the general format of cash flow analysis but vary the degree of detail in the initial inputs to focus application to the objectives of the architect, the land planner, the tax assessor, the lender, or the appraiser.

It is important to distinguish between a model which provides financial profiles with investment valuations and an appraisal model intended to forecast purchase price in the market. The investment model must presume at the start a purchase price which is then allocated to different capita.

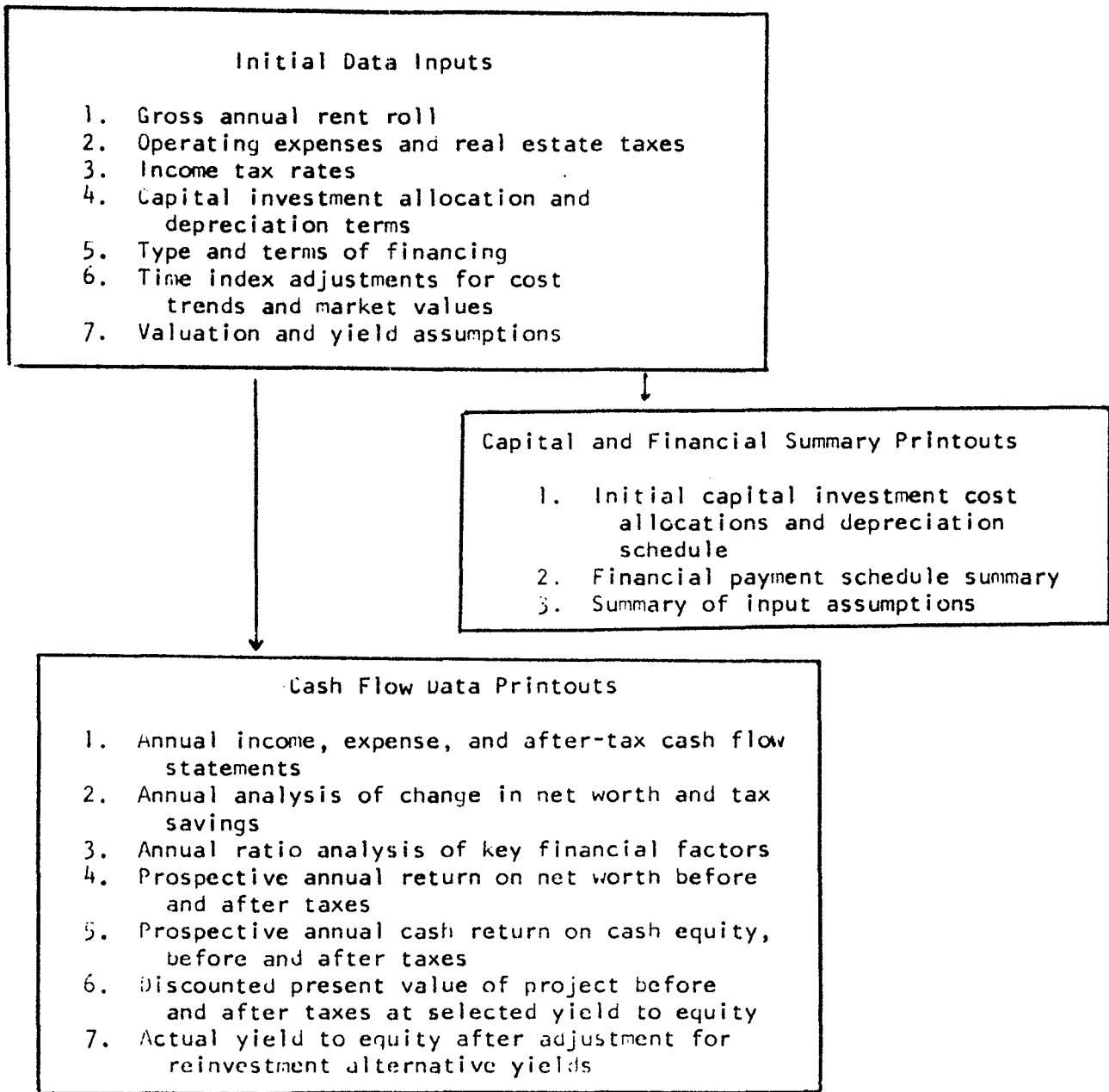


FIGURE 1: Simplified Flow Chart of Cash-Flow Investment Simulation Model

classes for depreciation calculations for purposes of measuring taxable income. Cash returns could be valued by an array of capitalization rates to permit equivalent comparisons of mortgage-equity and after-tax investment valuation results. However, the appraisal is attempting to forecast a price, not assuming one from the start. Moreover, the appraisal must presume group behavior patterns if it is to infer a price the sub-group may typically pay. If there is group behavior, there should be only one discount rate or, more realistically, a narrow range of capitalization bracketed by two related discount rates. Therefore, for an appraisal model there must be further processing of original acquisition cost allocations to bring after-tax cash flows as discounted by the market expectation of return into balance with the forecasted purchase price. An investment model is not an appraisal technique for estimating probable selling price until it can be proven that a certain group of buyers has a certain pattern of analysis of cash flows or that these buyers rely on the results of the specific investment models in question. Thus the presentation which follows must be thought of as an investment model until the modifications necessary to reflect market behavior have been introduced or buyers in the market generally follow the output of an investment model.

To illustrate both the theory of spendable after-tax cash-flow as the basic tool of real estate finance and the application of computer techniques to simplify analysis, the forms and outputs of the University of Wisconsin Mini-Model for rental properties are used in illustrations 1 and 2 or a computer terminal which asks for the required information in a dialogue with the analyst. The sample data

is based on the investment case of a 24-unit Apartment Building described in Appendix A. The output is found in Illustrations 3 and 4. A more elaborate cash-flow simulation model for land development is provided in Appendix B to suggest how capabilities of a model can be expanded to include fancy timetables for development, detailed capital budget assumptions, and a great variety of financing packages. These models and many variations are available commercially and are in use by a variety of real estate analysts today including major sources of mortgage money.

General Explanation of Inputs

Most of the information in regard to the 24-unit Apartment Building is clearly transcribed from the data in Appendix A to the input forms of Illustrations 1 and 2. Note that each is described in English so that the output form is identified in a fashion custom tailored to the property to be analyzed. A general description of what can or cannot be done with these input forms is always attached to the input form or available by inquiry on the computer terminal, and these instructions are found in Figures 2 and 3. However, several items need additional explanation:

Card type 1 - provides for student identification by name and number should there be two "John Smith's" in a class while the course and section number is for internal administration purposes. Of relevance to the real estate question is the decision by the investor that he wishes to receive a minimum of 10% per annum compounded on the Inwood basis and his determination that he will be an average or marginal income tax level of 30%. The last two items in columns 61 and 64 simply inform the computer how many cards to read for Card types 3 and 4 which are the only multiple cards in the program.

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model
February, 1970
Instructions For Use of the Coding Form

GENERAL

1. Cards were designed to require no change in field spacing stops set on the keypunching machine so that large batches of input forms may be done at once and so that a student may keypunch single cards to alter one or more assumptions for a second or third run. All decimal points and dashes must be punched where indicated on the coding form.
2. One character or number for each blank. Decimal points and dashes may not be altered or written over.
3. All dollar amounts must be coded in the rightmost portion of the allowed space - do not include dollar signs. Decimal figures must be corrected to the left relative to pre-printed decimal point.
4. For numerical inputs blank spaces will be read as a zero (0); for alphabetical inputs, blank spaces will provide white space on the output.

CARD 1

1. Last two digits of social security number required to differentiate between those with the same name.
2. Course and section number required for internal school accounting.
3. The equity discount rate is the yield rate at which the investor wishes to determine the present value of the project, discounting all cash returns to the beginning of the first period.
4. The income tax rate is the marginal rate assumed by the investor.
5. "# cards #3" indicates the number of component description cards (1-6) in column 61. "# cards #4" indicates the number of mortgage cards (1-4) in column 64. Failure to code these properly will terminate processing of your data and you will receive no output.

CARD 2

1. Project description can be an address, firm name, or description of project and run such as "24 Unit Apart. - 90% loan".
2. Extraordinary expenses can be used to deduct for high vacancies in first year, to eliminate excess rents in the first year, to recognize commissions for leasing space, to permit higher operating costs during a "shake down" year, etc.
3. The staging multiplier permits an optional increase in gross rent, expenses, and real estate taxes due to an increase in rentable area provided for in the Component Description and Mortgage Description cards Starting Year column. Indicate year increase is to take effect in column marked "Staging Year" (1-9) DO NOT STAGE IN TENTH YEAR! Both year and multiplier must be coded but if staging option is not used leave both coding spaces blank.

CARD 3

1. Component description might be land, structure, and furnishings and you would repeat these categories if you wished to build a second stage.
2. % depreciable is 100% minus % of salvage.
3. Depreciation method code:

- 0 = no depreciation
- 1 = sum of the digits
- 2 = straight line depreciation
- 3 = 125% declining balance
- 4 = 150% declining balance
- 5 = 200% declining balance

Graaskamp

FIGURE 3:

4. Starting year is always a 1 for the original investment components and the staging year for any additions or replacement of such short-lived items as furniture.
5. Useful life is number of years over which component will be depreciated (0-99).

CARD 4

1. Mortgage description may include any type of financial instrument. For example, a land lease could be defined as a site worth \$300,000, monthly payment would be 1/12 of annual rent and interest rate would be the annual rent divided by the indicated value of the land.
2. Monthly payment will be computed if not indicated.
3. Interest rates are constant annual rates. 8.5% interest = .0850.
4. Bonus interest should be stated as a percent of gross rents which must be paid to the lender. Bonus interest paid only if cash flow is positive.
5. Starting and Ending years are the first and last years payments are to be made.
6. If mortgage term is longer than ten years or is not refinanced, place a 10 in the column "Ending Year".
7. Indicate full amortization term in years of mortgage in column "Term".
8. You must indicate which new mortgage will replace a specific old mortgage. Otherwise if a loan matures during a projection period, final balance will appear in cash flow statement as "Principal Payment" and if it exceeds available cash, there will be an automatic working capital loan.
9. If loan for staging is less than cost of capital component for that stage required, cash is charged to working capital loan.

CARD 5

1. Expenses do not include real estate taxes. Expenses may include only cash outlay items or may include reserves for replacement and redecorating. In the first case you may wish to include several incremental cost component outlays for remodeling and refurnishing as an alternative to regular maintenance and reserve allocation.
2. All growth rates are constant annual rates. 5% growth rate = .05
-5% growth rate = -.05
Patterns of growth rates should be consistent; if rents are constant and expenses are expected to increase, project value rate of growth should probably decline.

CARD 6

1. Real estate taxes are for the first year. In Madison the average annual growth in real estate taxes is exceeding 6% and an average increase of 5% a year is the typical minimum rate of tax increase in cities throughout Wisconsin.
2. Project value rate of growth is a constant annual rate.

CARD 7

1. The vacancy rate is the percent of rent lost due to vacancy and turnover. For example, if an apartment has 10 units it has 120 monthly rental units. If 6 units turn over and are vacant 1 month the vacancy rate is 6/120 or 5%.
2. The working capital loan interest rate is either the 90 day note rate at the bank or the equity discount rate reflecting the yield required on short-term advances of equity money.

- Card type 2 - provides not only a title for the output but several special features as well. The item "extraordinary expenses" permits recognition of first-year variations in rent levels, vacancy rates or expenses which may characterize a project. In this case the facts indicated that there would be additional expenditures of \$2,100 in the first year and that there would be additional vacancies of 12% during the refurbishing and re-leasing of apartments during the first year. These adjustments combined mean that net cash income in the first year will be \$7,625 less than what might otherwise be expected. This device is therefore a method of modifying the simple linear time indexes for rents, expenses and taxes which are offered on card types 5 and 6. The staging multiplier and the staging year were not used in this case but permit the student one expansion of his project. For example the project might be doubled in size in the third year and the staging multiplier would multiply rents and expenses and real estate taxes by a multiplier of two. The simplification permits the student to phase capital investment to anticipate absorption rates of space but leads to some oversimplification of variable cost relationships which may exist with scale.
- Card type 3 - itemizes 6 classes of assets according to their depreciation group or starting year. It is more than adequate for a single investment but it should be expanded for elaborate staging. The arbitrary limit was to control key-punching and computer time expenses for the department.
- Card type 4 - The method of mortgage payment can be stated as a fixed dollar amount, as a level amortized mortgage if the number of months in the term of the mortgage is known, or as an annual constant rate a percentage of the mortgage amount converted to a monthly payment. To permit periodic refinancing, it is possible to start and stop mortgage obligation in any given month. For example, a first mortgage may be acquired at the time of purchase and a second mortgage then defined which begins 6 months later, with both mortgage balances replaced by a new first mortgage in the sixth year. With this device it is possible to test the impact of alternative financial loans on investment value and equity yield or to measure the influence on investment value of a loan closed to repayment for 10 years instead of 5 during an inflationary period. The bonus interest provision allows the investor to measure the true cost of his financing over time relative to mortgage

balance, to cash-flow, and to after-tax investment value. Because the repayment method is not tied directly to the mortgage due date, it is possible to finance with notes such as a 10-year mortgage, amortized on a 25-year basis, and ballooned for the balance at the end of 10 years. Payment of a mature mortgage balance is made directly from after-tax cash, and proceeds from new loans also go to the same account. Therefore, if the refinancing provides additional cash to the investor, it is recognized as a return, while deficit cash is first covered by operational income and then by an automatic working capital loan, a feature to be discussed when describing Card type 7. Since value can be created by the form and pattern of financing available to the investor and since mortgage credit is becoming so elastic in its terms and costs, complete flexibility is needed for sophisticated investment planning. The computations by the computer eliminate the need for the investor using any complex set of tables for a single result, while at the same time they reveal to the investor the exact cash-flow implications of the finance plan for each year under study.

Card type 5 - Begins with the so-called normalized gross rent and operating expenses (excluding real estate taxes). When calculating after-tax spendable cash, it is obvious that taxable income must change, even when the net income before tax and debt service is a constant dollar amount. However, it is likely that over the life of any particular investment this net income figure will also tend to shift as the elements which constitute revenue and expenses alter over time. Therefore, a time schedule or index of change permits the analyst to make explicit assumptions in regard to the future in order to test the sensitivity of his yield expectations to changes in the time-line of developments in rents or occupancy, real estate taxes and expenses, or resale price of his investment. One might test three sets of assumptions in regard to the future by holding the elements of net income constant in one case, inflating costs and prices in a second case, or perhaps inflating costs and deflating rents and resale to have a picture of the slope of downside risk as a third alternative.

Card type 6 - Project value growth rate is a resale price index which provides an opportunity to produce true depreciation, defined as the difference between original outlays and net recapture on resale. Inflation should be understated to reflect commissions and other claims on resale models permit alternative adjustments for resale costs or the curve of property value change. Time indexes are a simple way of

probing the investment significance of trends and future events. It is too early to find much acceptance of probability and risk models of real estate investment among those who make the market. Much real estate investment is made in anticipation of inflation, and this index model would provide an opportunity to measure just how inflation should affect purchase price limits currently. Gross rents must rise faster than taxes and expenses if resale price is to rise without a change in market discount factors. The reasonable expectations of profits due to inflationary price rise when converted to indexes in this section may not justify a contemplated purchase price when yield is actually measured for this set of assumptions. The use of an explicit cash-flow model, even though the indexes are only "guesstimates," may underscore the character of excessive asking prices. It is still true in real estate that most profits are made with a good buy rather than a lucky sale.

Card type 7 - Requires only a statement of vacancy rate and the interest cost of short term money required to cover operating deficits or refinancing shortages. The $\%$ rate in this case indicates the investor expects to use bank money, for if he used his own cash it would be necessary to indicate a minimum of 10%, just as he required on his original investment. These interest costs are added to working capital loan balance due and are not subtracted at tax deductible interest rates by the model.

General Explanation of Outputs

The teaching model provides two pages of output, Illustration #3 which summarizes assumptions and financing repayment schedule, and Illustration #4 which provides four types of information, a 10 year cash-flow forecast, a 10 year net worth analysis, a 10 year ratio analysis, and the present value of the project as a total of the present value of each investment interest discounted at the appropriate rate. In short, each source of spendable dollars for the investor is identified, given a dollar payment and scheduled for the fiscal year in which the outlay or receipt would occur. Present value concepts of money at work are meaningless without a reasonable effort to establish or assume the

the time-line of financial events related to the project.

NET INCOME in Illustration #4 represents the traditional method of real estate productivity although it is 'not normalized' for the projection period. This net income must be adjusted for deductible DEPRECIATION AND INTEREST to determine TAXABLE INCOME, and if taxable income is negative there can be TAX SAVINGS OR OTHER INCOME. Net income less interest and principal payments determines CASH THROWOFF before income taxes and if cash throwoff is negative it is necessary to replenish cash with a short-term WORKING CAPITAL LOAN. The term 'cash throwoff' represents a pre-tax but after debt service item and is standard terminology in the real income property manual published by the Society of Real Estate Appraisers. The estimated Income Taxes are then subtracted to determine cash from operations which must first be applied to working capital loan balances due before dropping through to SPENDABLE CASH AFTER TAXES. Spendable cash after taxes includes surplus proceeds for refinancing and measures the yearly cash dividend to the investor, the income stream which so many theorists have generalized. It is highly unlikely that the curve of this cash flow would permit any averaging (ie, normalizing) for valuation purposes since an annual forecast already represents an average of monthly receipts. At current interest rates and required equity yields a difference of one month means a difference of 12% per annum or more.

In addition to cash dividends there is the potential benefit of equity enhancement due to appreciation in the market value of the property or repayment of loans in excess of market value decline so the investor is concerned with the changing position of the net worth of the property. Cash realized on resale would be net worth less capital

gains taxes and deferred income taxes on excess depreciation and these computations are made as a preliminary to valuation of all cash returns to the investor assuming ownership for a given period of years and then resale at the market value for the year specified as the resale date. Computation of the capital gain and taxes on sale is explained in Figures 4 and 5.

Analytical Ratios

To measure risk for the mortgage investor and the equity investor two ratios are provided. For the lender the DEFAULT RATIO indicates the cash breakeven point as a % of gross rent as defined in Fig. 4. The lender views this as the variation in the income stream which would affect repayment of the loan according to the terms. The equity investor has a more static view of risk for he is concerned with rapid recovery of his original cash investment. In Illustration 4 the apartment case indicates that considering all AFTER-TAX CASH RECEIVED AS A RATIO OF INITIAL CASH EQUITY, the equity investor has no cash risk after 5 1/2 years have passed while the lender after the refinancing still faces an exposure of, \$165,983. Risk stated in terms of loss of the original investment is therefore much higher for the lender than for the equity investor, a fact which runs counter to the traditional viewpoint but which explains the economic logic of higher mortgage yields and equity participation.

BONUS INTEREST paid is converted to an interest cost by dividing the payments by the average loan balance outstanding during each fiscal year. A bonus interest stated as 4% of gross rent appears far more injurious to the equity position than restatement as % of loan balance

FIGURE 4:

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model
February, 1970
Basic Definitions of Model Outputs

1) Current period return on Net Worth before taxes =

$$\frac{\text{Cash Throw-off} + \text{Change in Net Worth}}{\text{Net Worth at End of Previous Year}}$$

2) Current period return on net worth after taxes =

$$\frac{\text{Spensible cash} + \text{tax savings on other income} + (\text{change in net worth} - \text{change in cap. gains tax})}{\text{Net worth at the end of previous year less capital gains tax of previous year}}$$

3) Cash Return on original cash equity before taxes =

$$\frac{\text{Cash throw-off}}{\text{Total initial investment less Initial Mortgage Debt}} \\ \text{(This is adjusted for staged projects)}$$

4) Cash Return on original equity cash after taxes =
(This is adjusted for staged projects)

$$\frac{\text{Spensible Cash after taxes} + \text{Tax savings on other income}}{\text{Total initial investment cost less initial mtge. debt}}$$

5) Net income - market value ratio

$$\frac{\text{Net Income}}{\text{Market Value for the same period}}$$

6) After tax cash recovered - cash equity ratio (payback) =

$$\frac{\text{Accumulated spendable cash after taxes} + \text{accumulated tax savings on other income}}{\text{Cash equity required}}$$

7) Default ratio =

$$\frac{\text{Operating Exp.} + \text{R. E. Taxes} + \text{Prin. \& Interest on Mtge.} + \text{Working Cap. Loan Prin. Repayment}}{\text{Gross Income}}$$

8) Lender Bonus Interest Rate =

$$\frac{\% \text{ of effective gross (not to exceed cash throw-off for period)}}{\text{Balance due on loan at beginning of period}}$$

9) Resale Market Value at End of Year

$$\text{Total Initial Investment Cost} + \frac{\text{Additional staged investment} \times}{\text{Index for Year}}$$

10) Net worth of property =

$$\text{Market value less balance of loans less working capital loans}$$

11) A. Sales proceeds subject to capital gains tax =

$$\text{Market value} - (\text{Total Capital Investment} - \text{Straight-line depreciation} - \text{Allowed excess depreciation})$$

B. Sales proceeds subject to income tax =

$$\text{Cumulative depreciation taken} - \text{Straight-line depreciation} - \text{Allowed excess depreciation}$$

$$\text{C. Taxes on sale} = (\text{A} \times 1/2 \text{ Income Tax rate}^*) + (\text{B} \times \text{Income Tax Rate})$$

* Not to exceed 25%

12) Present value of project before taxes =

$$\text{Original mortgage balance} + \text{PV of received stream of cash throw-off} + \text{PV of net worth if sold at end of year indicated by column number.}$$

13) Present value of project after taxes =

$$\text{Original mortgage balance} + \text{present value of received stream of spendable cash after taxes} + \text{PV of received tax savings on other income} + \text{PV of (net worth less capital gains tax) if sold at end of year indicated by column number.}$$

on standard as in year 6 of Illustration 4 where the effective additional interest cost was 1.22%.

The universal interest in participations in future increases in gross rent, cash throwoff or net worth demands that the mortgage lender make the spendable cash-flow forecast advocated a necessity. Otherwise any lender estimate of yield is simply crapshooting finance. More sophisticated computer programs are available to compute yield from any alternative combination of participation loan formulas. The ratio of cash throwoff returns to original cash equity or spendable cash and tax savings as a ratio of original cash equity is a method by which many investors analyze their returns. For example, the drop of after-tax cash below before tax cash indicates a sell point in the 7th year of the investment which is confirmed by valuation analysis below.

Valuation of Cash Returns to the Investor

The real estate fraternity is accustomed to discounting future returns by the Inwood Tables and the mortgage equity approach continues this tradition. The teaching model therefore uses Inwood despite the fact that it is misleading and fallacious when applied to equity positions or loans from non-financial institutions. For the 24-unit Apartment Case the investment value of the entire project has been computed by determining the sum of the present values of the initial interests in the project. Reference to Figure 5 will show that the computation involves the original mortgage balances which represent the present value to the lender of debt service payments plus the present value of cash throwoff for before tax value or the present value of spendable cash after taxes plus tax savings on other income discounted

at the minimum acceptable equity return rate, in this case 18%.

The sum of these present values must equal or exceed the total initial investment in the project to justify the project from a rate of return viewpoint. Thus in Illustration #4, on the bottom line, purchase and sale at the end of the first year or at the end of the second year at the market value indicated for these years would not justify the total initial investment. It would be necessary to buy and hold until the third year or preferably until the 7th year to maximize yield and to achieve 18% compounded after taxes.

It is recognized that the assumptions of Inwood discounting do not hold true in most real estate situations. Inwood assumes immediate reinvestment of cash received from interest and recapture of principal at the same rate. Most equity investors make discrete investments from time to time using short term investments in the interim. Secondly, alternative investments to real estate in terms of liquidity, security, management, or portfolio diversification may have priority at the time of reinvestment. Then, again, the relative attractiveness of a real estate property will vary from year to year as the yields of alternative investments or tax laws change. Therefore it is much more realistic to assume reinvestment of future receipts or postponed equity commitments at an average rate of return for the portfolio investor or a specific rate of return for short term funds. The computer would discount to the present future commitments for capital outlays of a staged investment and compound to the end of the forecast period the receipts as they became available for reinvestment. It would then search for the discount factor which makes the present value of future

outlays equivalent to the future value of expected returns. A demonstration of this technique appears on the last page of Appendix B, the land development model. On the last two lines on that page note that Inwood discounting at 25% indicates the project is feasible while the real return on investment never exceeds 18%. Model building for investment valuation of real estate is hampered by traditional real estate discounting methods which are appropriate to large portfolio, instant reinvestment mortgage lending but not appropriate to equity investors in real estate.

An Investment Model as an Appraisal Technique

Professor R. U. Ratcliff¹⁰ has strongly stated the case that in the majority of assignments, the task of the appraiser is to forecast the probable sales price of a specific property. This objective is the premise of discussion regarding conversion of investment models to an appraisal method to forecast the central tendency of price negotiations for a specific property. The concept of market action implies group behavior, knowledgeable buyers and sellers with alternative courses of action open to each, striking a bargain only when their respective self-interests will agree to buy and sell, Professor Ratcliff has stated: "There are only two devices open to the appraiser for predictive purposes -- statistical inference and simulation."¹¹ Market comparison as an approach to value is a rough form of statistical inference and more recently much has been written on statistical regression analysis of sales prices of residential properties. Simulation is a twenty-five cent word for describing what an appraiser does to predict value, most specifically when using the income approach. However, present income approach methods are challenged because they do not accurately simulate

how sophisticated investors value income streams. Spendable after-tax cash flow analysis is far more representative of at least real estate investment counseling techniques and therefore a more precise simulation approach to value.

The spendable cash simulation approach is only an investment valuation model when the inputs for time index dynamics and tax computations characterize a specific investor. However, Professor William Kinnard has underscored¹² the fact that when the appraiser has made a determination on highest and best use, he has also implied the probable group of buyers who would make such use of the property. In that case an appraiser, knowledgeable in regard to the decision-making logic and probable financial and tax pattern of the group of investors inferred by a statement on highest and best use, can produce an investment value from simulation that is the most probable sales price for the investment opportunity in question. A computer cash flow model only relieves the appraiser of clerical and computational responsibility while permitting him to stress his professional understanding of economic and investment research and analysis.

Within the implications of the above proposition, there are four means by which the investment model may become an appraisal model:

1. Widespread use of spendable cash models by investors in different parts of the country would mean that the model does simulate and direct investor behavior.
2. Research of the pattern of investor assumptions and expectations in different areas of the country would produce aggregate averages similar in concept to the data provided by

nationwide standardized accounting systems for industries like the motel-hotel business. Careful study of sales prices on properties thus analyzed for the perspective buyer might suggest the statistical dispersion of price around value. In addition, appraisers would have incentive to analyze investor group patterns in their areas to establish parameters for the dynamic assumptions of a cash flow model.

3. Eventual agreement on a cash flow model format will one day permit widespread use of a risk model in which revenues, expenses financing, and resale estimates can be stated in ranges. The computer would then determine the distribution of alternative results and the probability of given yields being achieved at alternative purchase prices. The price which had the highest probability of achieving a yield acceptable to investors might be defined as the most probable sales price of the property.

By whatever means spendable cash computer models influence investor behavior and appraisal simulation to predict sales price, with time it should be possible to relate the variation in sales prices to values simulated in the bargaining process. The range of prices relative to values as a result of better investment simulation today will permit introduction of statistical inference methods tomorrow. Spendable cash flow models indirectly advance both the concepts of Babcock in the thirties and Ratcliff in the sixties.

A Final Thought

As a final thought on the use of computer simulation models, one could argue that it may lead to resolution of a basic dilemma in appraisal theory for income properties. If rental income power is a measure

of market demand, and if historical costs are necessary to measure capital and operating tax deductible budget items, and if financial and yield patterns represent price to income relationships in investor markets--might it be that an after-tax spendable cash income approach represents a synthesis of the three approaches to value. Such a synthesis would eliminate the necessity of the more awkward process of correlation. In any even model input and output material permits the appraiser and the mortgage banker to demonstrate a professional understanding of real estate investment dynamics appropriate to the modern trend toward participation loans and hybrid financing which strive to trade-off the 4 sources of cash between different types of investor objectives. The model suggests that the stylized ritual of the present income approach can be modified so that Income (I) and Capitalization Rate (C) can be factual data rather than abstract fictional concepts.

Notes

¹Arthur M. Weimer, "History of Value Theory for the Appraiser," The Appraisal Journal, October, 1960, pp. 469-83.

²Frederick M. Babcock, Evaluation of Real Estate (New York: McGraw-Hill, 1932).

³Richard U. Ratcliff, "Capitalized Income Is Not Market Value," The Appraisal Journal, January, 1968, pp. 33-42.

⁴James E. Gibbons, "Mortgage-Equity Capitalization: Ellwood Method," The Appraisal Journal, April, 1966, pp. 196-203.

⁵Paul F. Wendt, "Ellwood, Inwood, and the Internal Rate of Return," The Appraisal Journal, October, 1967, pp. 561-601.

⁶Ratcliff, p. 36.

⁷Spensible cash is recognized by investment counselors but not appraisers. Consider James M. McMichael, Real Estate Investment Analysis and Programming (Los Angeles: California Real Estate Association, 1965).

⁸The Harvard Group, Inc. "A Risk Model for Real Estate Investment Analysis," (A mimeographed business prospectus traced to the Harvard School of Business but authors are unknown).

⁹For other discussions of real estate investment models, see: Richard U. Ratcliff (ed.), Colloquium on Computer Application in Real Estate Investment Analysis, (Faculty of Commerce and Business Administration, University of British Columbia, 1968).

¹⁰Richard U. Ratcliff, Modern Real Estate Valuation (Madison, Wisconsin: Democratic Press, 1965).

¹¹ibid., p. 56.

¹²William N. Kinnard, Jr., "New Thinking in Appraisal Theory," The Real Estate Appraiser, August, 1968.

APPENDIX B

CASH FLOW AND FINANCIAL ANALYSIS
COMPUTER MODELS CURRENTLY AVAILABLE

1. Business Strategies, Inc. (Contact Michael Sichel)
101 Park Avenue
New York, N. Y. 10017
Telephone (212) 889-0522
2. Coldwell Banker & Company
Los Angeles, California (in-house)
3. Computer Decisions Systems, Inc.
Minneapolis-St. Paul International Airport P. O.
Minneapolis, Minnesota 55450
(612) 721-6673
4. H. B. Hodges, Jr.
1200 Potomac School Road
McLean, Virginia 22101
(703) 356-4425
Example (GE Time-Sharing Network)
5. Realmetrics (Contact Ronald S. Graybeal)
24 California Street
San Francisco, California 94111
Example (GE Time-Sharing Network)
6. Sunn Real Estate Computer Systems
511 S. Brookhurst Road, Suite 108
Fullerton, California 92633
Example (GE Time-Sharing Network)
7. University of Wisconsin Land Development Model
Room 101
School of Business
University of Wisconsin
Madison, Wisconsin 53706
(in-house punch cards available)

CHICAGO MORTGAGE BANKER'S ASSOCIATION

SEMINAR ON WORKOUTS

May 20, 1976

LaSalle Hotel - Chicago

1. The widespread failure of real estate projects in the past several years and the necessity for continuing seminars on the salvage of distressed loans is primarily caused by the lending industry rather than outside factors such as inflation and politics which are blamed for every disaster in the annual reports of banks and real estate trust companies.
 - A. There is a fundamental depravity in corporate finance which is incompatible with a viable real estate project.
 - B. In good times or bad the lender sees the real estate as an accounting game
 1. There are spreads between the cost of funds and the loan rate.
 2. There are points, basis points, and formulas for taking profits now rather than later, if earned.
 3. There are floating rates to protect against the money market, equity kickers to protect against inflation, escrows and letters of credit to protect against extra expenses, and tax shelters to provide profit margins which otherwise wouldn't exist.
 4. And now there are asset swaps to conceal the bank's losses and incredible accounting complexities to postpone and make impossible stockholder suits by the investors defrauded by the trust.
 5. There are special deals to avoid Chapter 11 or Chapter 12 at the expense of some poor SOB's equity which was eroded by accrued interest charges.
 6. All of these intellectual opiates allow the money-pushers to enjoy the same self hypnosis in disaster as they enjoyed when making the loans.
 - C. But all of these front office accounting games fail to recognize that a viable real estate project is a cash game that begins with revenue from the consumer.
 1. Peter Drucker said the only justification for business enterprise is to serve a customer
 2. At any closing the lender still requires 2% for property insurance for fear his collateral will burn down but never requires 1% in original research to discover if his collateral will rent up.

- D. Every project must relate to the community of non-users as well as to the potential user because the projects fail cause the non-users to pay:
 - 1. Additional real estate taxes
 - 2. Additional interest rates on commercial and consumer loans to repay bank losses in real estate
 - 3. Additional interest to bribe new investment money back into real estate despite the perceived risk implied by the ruins of earlier projects and developers
- E. B. B. Cohen once said that the crooks and the economic cycles never bothered him; it was the dummies that killed him and a man had an obligation not to be a dummy, particularly when dealing with matters of public trust.
 - 1. The bank should hire and pay the real estate analyst or appraiser who provides a preliminary analysis of the property to avoid the subtle biases of the American business team which advocates a project
 - 2. A mortgage loan is a protagonist antagonist relationship and therefore should withstand that type of review from the outset with both sides prepared to rebutt or confirm the arguments of the other.
- II. One of the problems big banks and big real estate trusts have in conceptualizing real estate markets is the fact there are no big markets. Real estate is a series of mini-micro markets.
 - A. Free enterprise is the art of creating your own monopoly. A 2⁴-unit building needs to find only 2⁴ people somewhat dissatisfied with alternatives.
 - 1. An apartment business with 2⁴ customers will require at least \$500,000 in capital at \$20,000 per unit, perhaps as much as \$750,000.
 - 2. Annual rent rolls must be in excess of \$100,000 in sales
 - 3. These are more assets and more sales than is true of more that half the businesses in the United States and all from 2⁴ satisfied customers.
 - B. Most projects reach multiple sub-markets.
 - 1. An office building may serve lawyers, accountants, political lobbyists and trade associations
 - 2. A hotel requires ten or twelve different aggregate demand models and capture rate models to estimated occupancy.

3. In short it is necessary to segment each market into pain stakingly defined units to profile who needs it and how many of those folks out there there might be.
 4. But aggregate sub-markets (absorption rates) must be reduced by merchandise analysis to determine actual capture rates.
 5. This careful pre-programming of the project requires patience, and care and a predisposition that a product is ultimately for the user - not the investment banker, not the architect, not the landowner, and certainly not the bank's loan committee.
- C. And here is the fundamental problem - the project concept is designed to be sold to the moneylender and it is not intended to be designed with sensitivity to the consumer. The consumer is seldom asked his needs, his priorities, or his budget.
 - D. Most mortgage bankers have learned to cheat on the 2013 form by backing into the construction costs on FHA permissible rents. More relevant is the issue of obtainable rents and backing down to determine value or justified investment. (See Exhibit A).
- III. We believe that for every project in search of a market it is ultimately possible to name the prospective customer who can then be surveyed for relevant information about their space needs and motivations.
- A. A project in search of a market must be first analyzed to determine its positive and negative attributes in terms of
 1. Static attributes
 2. Legal attributes
 3. Linkage attributes
 4. Dynamic attributes
 - B. Since an appraisal is a feasibility study we teach that the format and method are the same and the probable use of the property leads to identification of both probable user and the most probable investor.
 1. Feasibility is concerned with the fit of the project to the needs of the user and the capital budget required
 2. Appraisal is concerned with the fit of the capital budget and revenue stream to the most probable investor and that is a secondary issue, derivative of the need for the revenue unit in the project
 - C. To segment the potential market one needs to define a revenue unit, the decision maker, and the source of a prospect list for those decision makers

- D. The revenue unit may be related to the method of measuring profit of the project in question such as per acre, per camper pad, per event, per front foot of shoreline, per stool or table, etc. not to mention sq. ft., per bowling alley or per tennis court hour.
- E. Sometimes the unit is identified by who really signs the check for a particular type of real estate.
1. The salesman or the management paying his travel costs
 2. The doctor of the clinic
 3. The district manager or the corporate real estate manager
 4. The ticket buyer or the promoter
 5. The hockey or tennis league, team business manager, travel agency tour guide
- F. The market segment may be defined initially by the source for a prospective user list - people who share a common address, hobby, professional specialty or some other identifier.
1. A reverse directory or criss-cross telephone book
 2. Building directories of comparables
 3. Mailing lists of specialty publications
 4. License number spotting
 5. Guest registers
 6. Charge account mailing addresses
- G. A survey of existing properties and alternatives defines only the competitive standard - minimum product and price necessary to be in the market
1. Comparison shopping may identify a gap in the supply
 2. Will identify the existing or potential inventory
- H. A survey of users is designed to reveal the attributes which would provide a competitive differential or marketing advantage required of every successful project
- I. Survey of users should also provide a clue to the ratio analysis necessary to convert absorption rates to capture rates
1. How many will consider moving?
 2. Of those, how many would consider staying in town?
 3. Of those, how many would consider an apartment?
 4. Of those remaining who would consider an apartment in town, how many would consider a specific location?

5. Notice the reduction process defines a subset of the market - a micro-market

- IV. Once the customer's price range and product requirements are known, the accountants and the marketing men for the distressed project come into direct conflict. The lender will do anything to avoid spending real cash up front to correct the marketing deficiencies of the project (much like the owners of baseball teams who change managers rather than invest in player development).
- A. Most lending institutions turn to the professional property management firms for on-the-site staffing. Most of the better marketing, however, is done by bright, enthusiastic young people who first of all relate to customers and secondly have not been conditioned by the conventional wisdom of a largely order taking group.
 - B. Nor does the moneylender typically feel much responsibility to the community in terms of generating a tax base, cleaning up the job site, or generating a positive image within in his own neighborhood in order to create the best marketing program of all referrals.
 - C. Assume a 360-unit project which costs \$100 a month per unit to carry and market. If it would take a year to rent the project as is to a very unstable and soon to be dissatisfied tenancy, then it will cost \$180,000 over that period of time.
 1. However if the marketing period was shortened to six months, the carrying charge would be \$54,000.
 2. Therefore one could spend well over \$100,000 up front on landscaping, decorating, and correction of the design flaws in the project and relative to the community.
 3. In addition to improving the appearance, rents could be reduced to fit the needs of long-term tenants to provide a positive cash flow on the project and a viable unit in the community.
 4. Of course the cash expenditures will increase the apparent losses of the lender and rentals of market rates will reduce the appraised value to the detriment of the accountant's loss reserve and the banker's revolving credit agreement all of which are more important today than the community and the tenant.

- D. After all, the objective of real estate is to create a financial product for the investment banker and the bank.
1. I submit there will be few successful workouts until the banks and their investment managers have the character to do what they should have done in the first place -- identify the consumer, his needs, his motivations and delivered that kind of real estate product.
 2. A good financial product would ultimately follow.
 3. It is significant that a review of your seminar outline is a list of legal and accounting maneuvers.
 4. Where are the speakers who have successfully merchandised the floundering project?
 5. Where are the lenders who have bitten the bullet and rehabilitated the project to be a viable part of the community in which it is located?
- E. Real workouts require devastating attention to detail on the site and in the community and large corporate law firms and lending institutions are not prepared to do it. Distressed properties should be made available to bright young people who will trade that type of commitment to merchandising detail for a piece of the action.
- F. That approach means big losses now rather than later. However, real estate trust management and many mortgage bankers as well as banks failed to do the job they were paid to do. In a free enterprise economy, failure should put them out of business and responsible business behavior is to rehabilitate the real estate as a social unit, whatever the cost for prior irresponsibility.

INCOME-PROPERTY FINANCING CONFERENCE
Feasibility & market Analysis
Mortgage Banking Association of America
May 5, 1978

Instructor: Professor James A. Graaskamp
University of Wisconsin School of Business

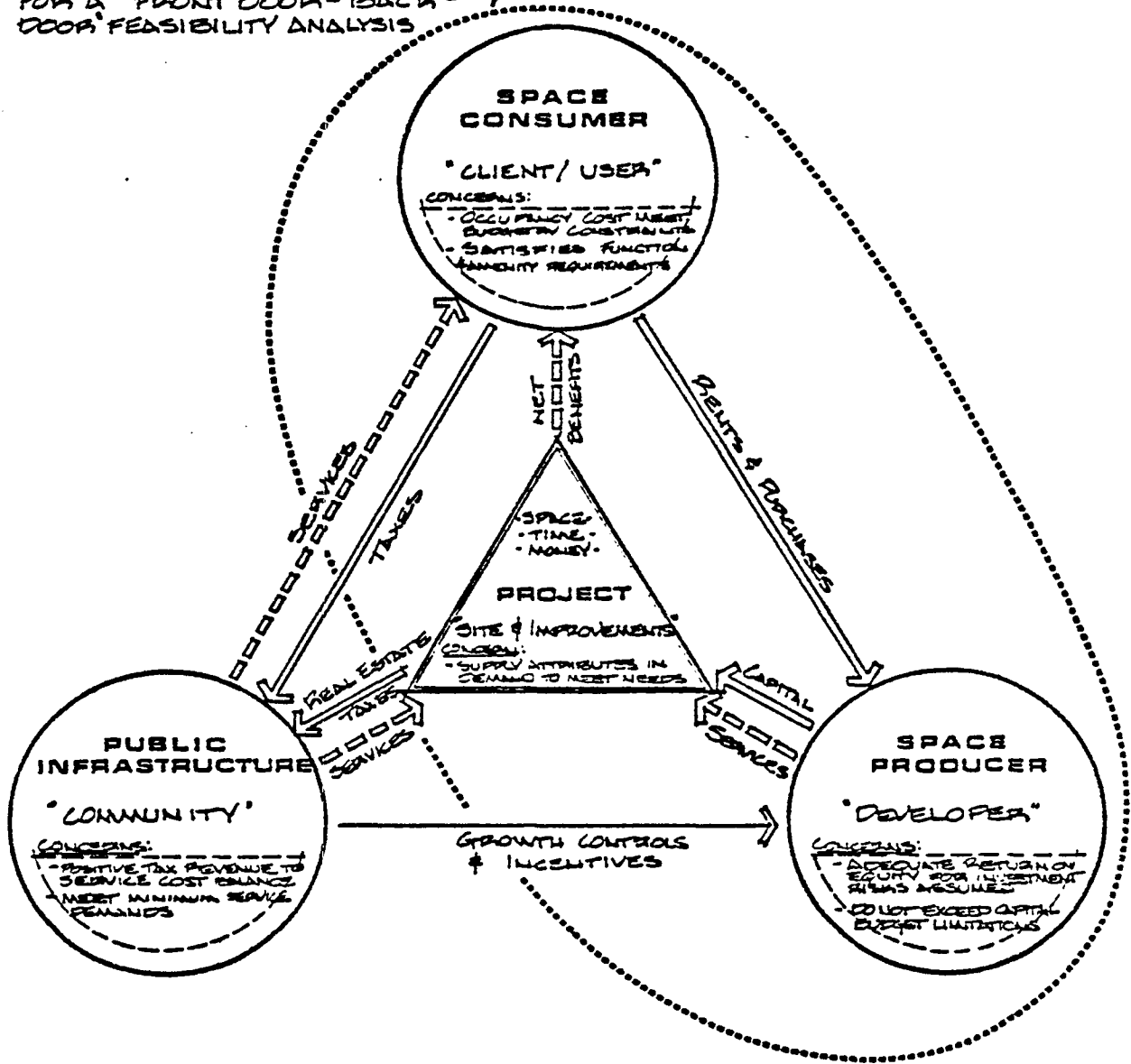
FIRST MORNING
9:00 A.M.-10:15 A.M.

I. Basic Concepts and Definitions

- A. Real estate is a tangible product - defined as artificially delineated space with a fourth dimension of time referenced to a fixed point on the face of the earth.
1. Real estate is a space-time unit, room per night, apartment per month, square foot per year, tennis court hours, or a condominium for two weeks in January at a ski slope.
 2. To the space-time abstraction can be added special attributes to house some form of activity.
 3. Improvements from survey market to city layouts to structures define space.
 4. Legal contracts and precedents define time.
 5. Rights of use are defined by public values, court opinions.
 6. Private rights to use are those which remain after the public has exercised its rights to control, to tax, or to condemn.
- B. A real estate project is cash cycle business enterprise which combines a space-time product with certain types of management services to meet the needs of a specific user. It is the process of converting space-time needs to money-time dimensions in a cash economy.
1. A real estate business is any business which provides expertise necessary to relate space-time need to money-time requirements and includes architects, brokers, city planners, mortgage bankers, and all other special skills.
 2. The true profit centers in real estate are in the delivery of services and cash capital. Money is an energy transfer system.
 3. Equity ownership is the degree to which one enterprise controls or diverts cash from another real estate enterprise.
 4. Public has direct ownership to the degree real estate taxes take a percentage of tenant income in excess of service cost.
 5. Consumer must view space as a total consumption system involving direct cost, surface cost, transportation cost and negative income of risk.
 6. The best real estate project is the one which has the lowest net present value of cost as the sum of cost to the consumer production sector and public sector.

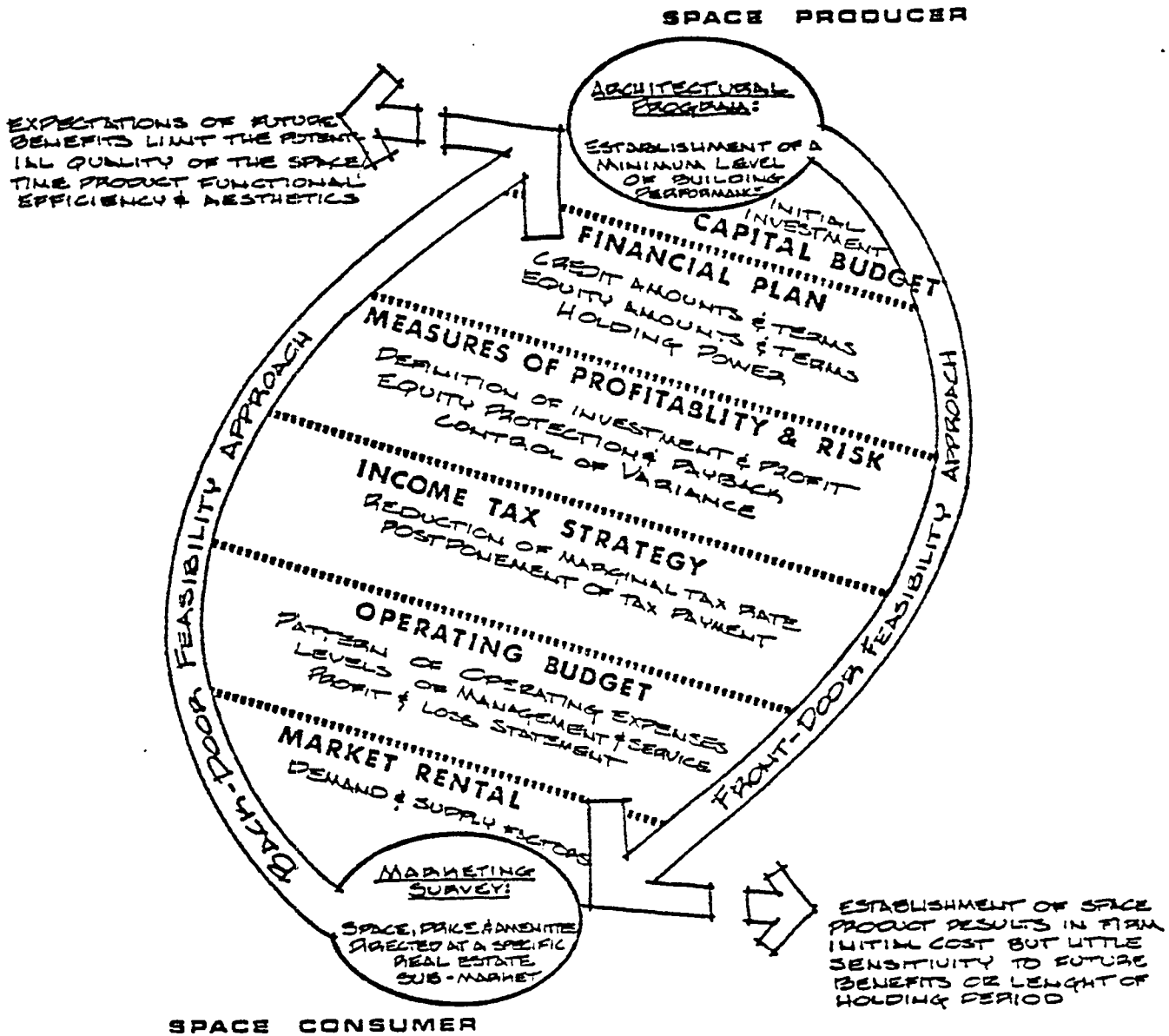
EXHIBIT I

DATA INPUT CONCENTRATION FOR A "FRONT DOOR - BACK DOOR" FEASIBILITY ANALYSIS



THE REAL ESTATE DEVELOPMENT SYSTEM

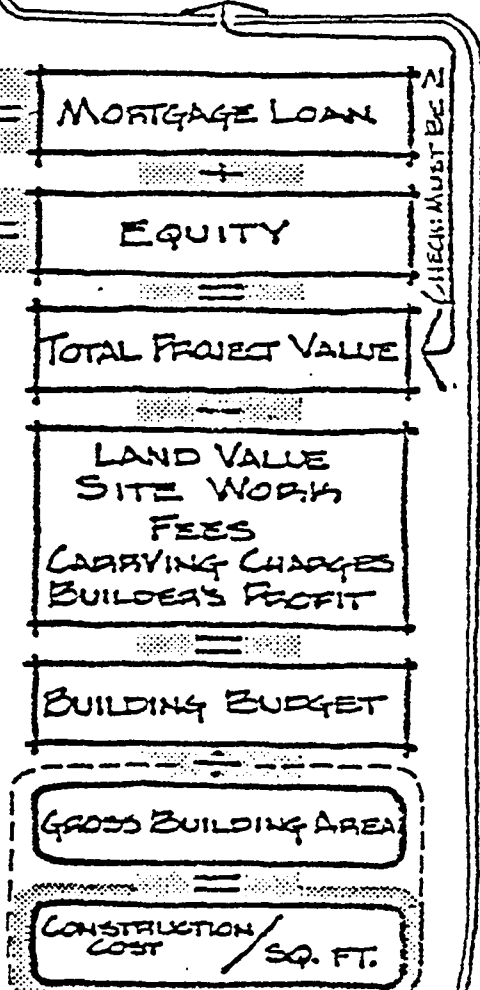
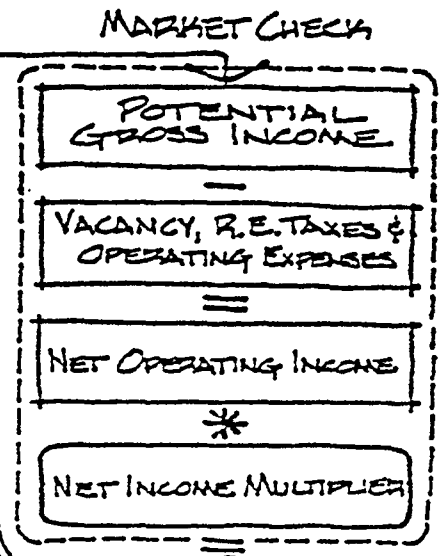
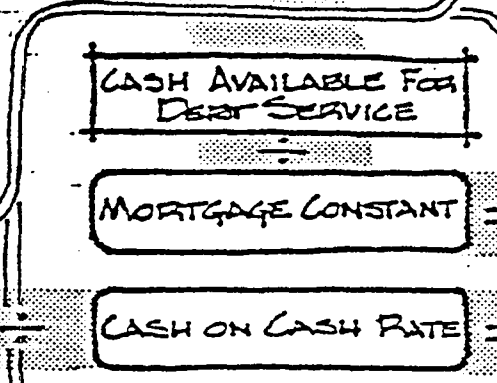
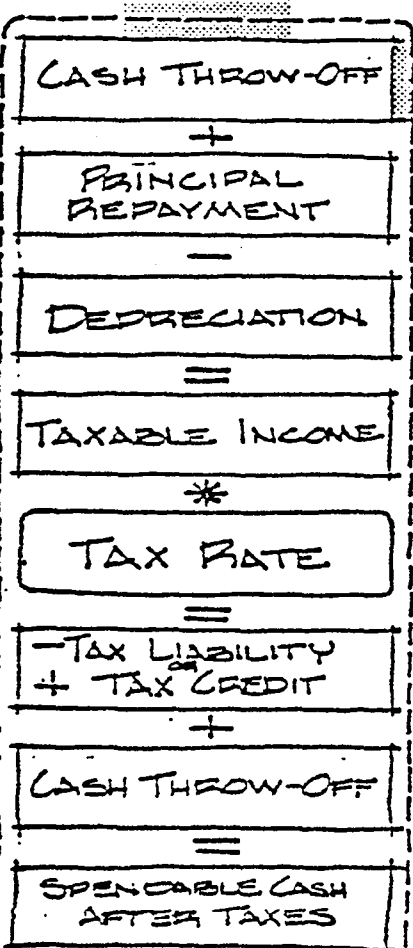
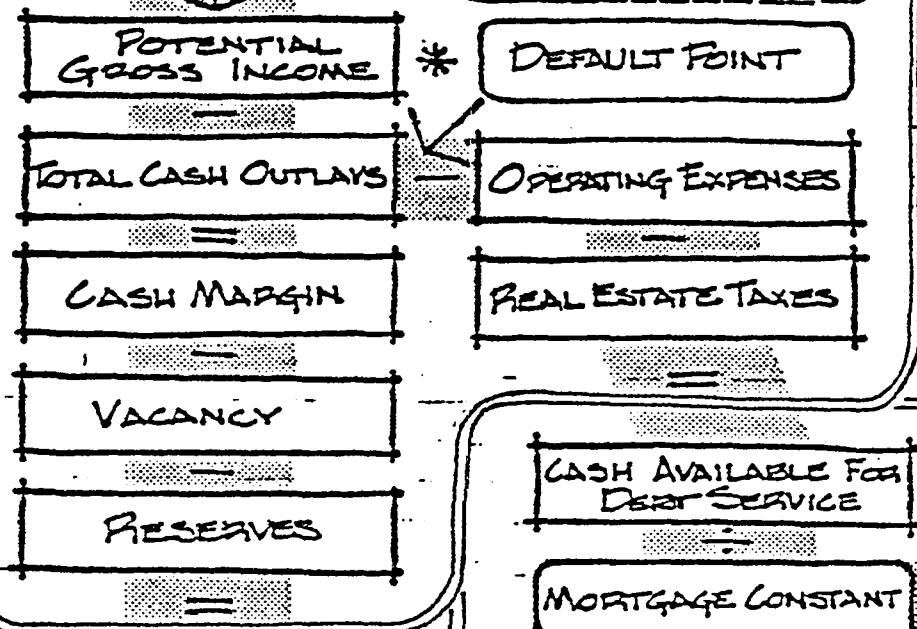
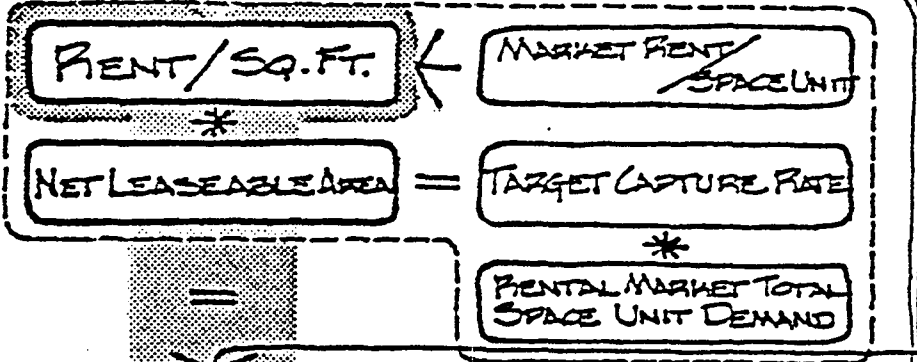
EXHIBIT 2



TWO SIDES OF THE COIN

BACK - DOOR APPROACH

MARKET SURVEY



ARCHITECTURAL PROGRAM

CAPITAL BUDGET

CASH MUST BE 2

OPERATING BUDGET

Exhibit 4

MARKET SURVEY

BACK-DOOR APPROACH

MARKET CHECK

$\$6.00 \leftarrow .50 / \text{SQ. FT. / MO.}$
 \times
 $600 \text{ SQ. FT.} = \$300 / \text{MO. RENT}$
 \times
 $=$

$3600 \times 80\% \text{ DEFAULT POINT}$
 $= 2880$
 $= 720$
 $180 \text{ (5\% VACANCY)}$
 $= 180 \text{ (RESERVES)}$
 $=$

3600
 $=$
 $\$1,420 \text{ VACANCY, TAXES, \& EXPENSES}$
 $=$
 $\text{NOI} = 2180$
 $\times 10 = 21,800$

$\$1640 \text{ DEBT SERVICE}$
 $=$
 $.096552$
 $=$
 $.08 \text{ CASH ON CASH}$

$\$16,985$
 $+$
 $4,500$
 $=$
 $\$21,485$

360
 $+$
 $\$116$
 $=$
 $\$1200$
 $=$
 $\$724$
 \times
 $.30$
 $=$
 $\$217 \text{ TAX SAVINGS TO OTHER INCOME}$
 $+$
 $360 \text{ CASH THROWOFF}$
 $=$
 $577 / 4,500 = 12.8\%$

$.00683\% \text{ 1\% YR}$
 $9\% / 30 \text{ YR MORTGAGE}$
 $.096552$

$\$3,000 \text{ (LAND)}$
 $1,948 \text{ (DEVELOPMENT FEE)}$
 $3,222 \text{ (INDIRECT AT 15\%)}$
 $7,170$

$14,314$

$700 \text{ GROSS FOOT PER UNIT}$

$\$20.45 / \text{SQ. FT.}$

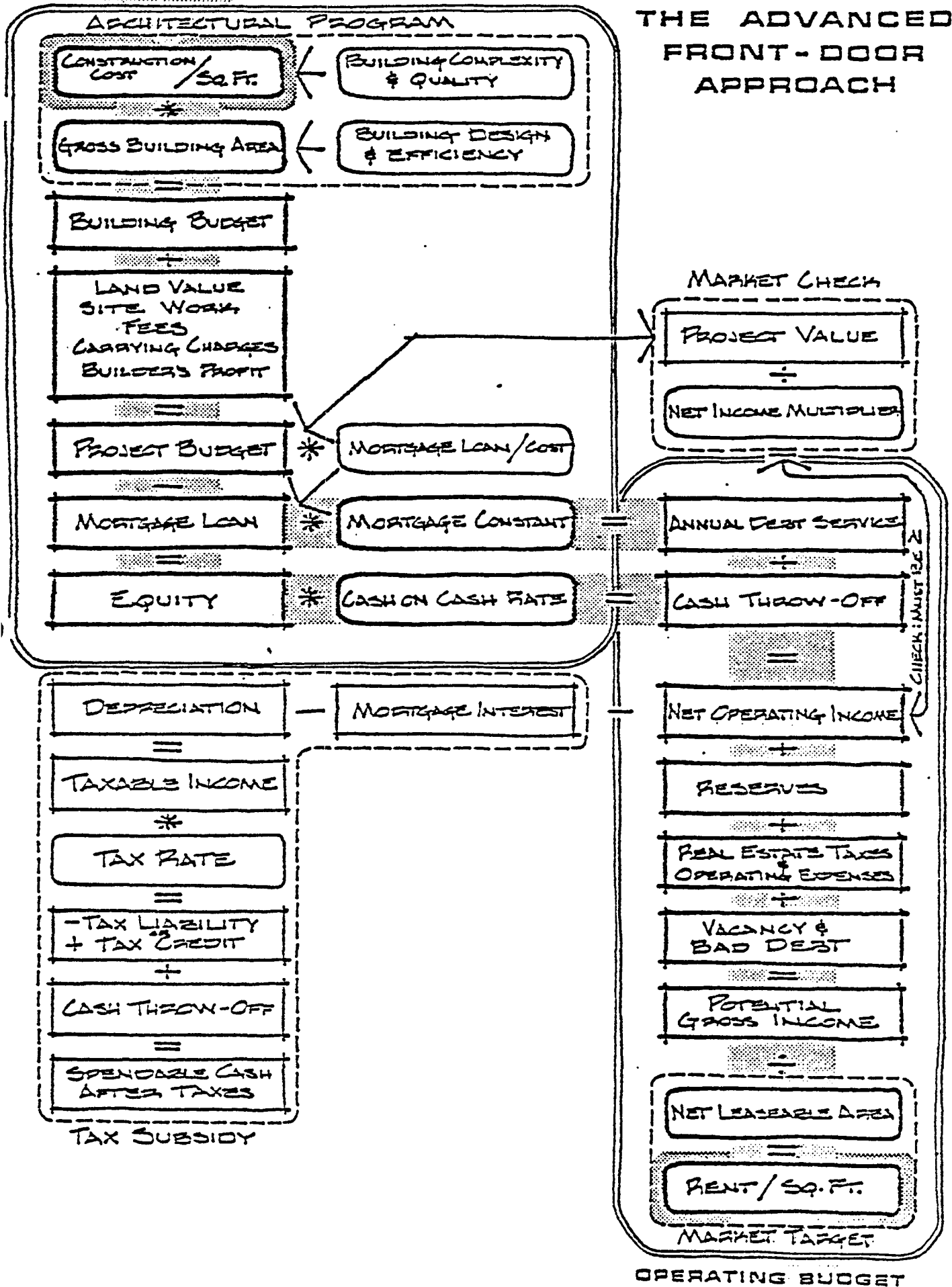
ARCHITECTURAL PROGRAM

CAPITAL BUDGET

TAX SUBSIDY

85% OR EFFICIENCY

THE ADVANCED FRONT-DOOR APPROACH



CAPITAL BUDGET

Exhibit 5 cont'd.

THE ADVANCED FRONT-DOOR APPROACH

ARCHITECTURAL PROGRAM

26,893	*	
41,040	*	
1,103,700	+	
1,232,450	*	.80
985,960	*	.096552
246,490	*	.075

MARKET CHECK

95,196.41
18,486.75
113,683.16
8,539
59,657
10,140
192,019.16
35,589
5.39

MARKET TARGET

CHECK MUST BE

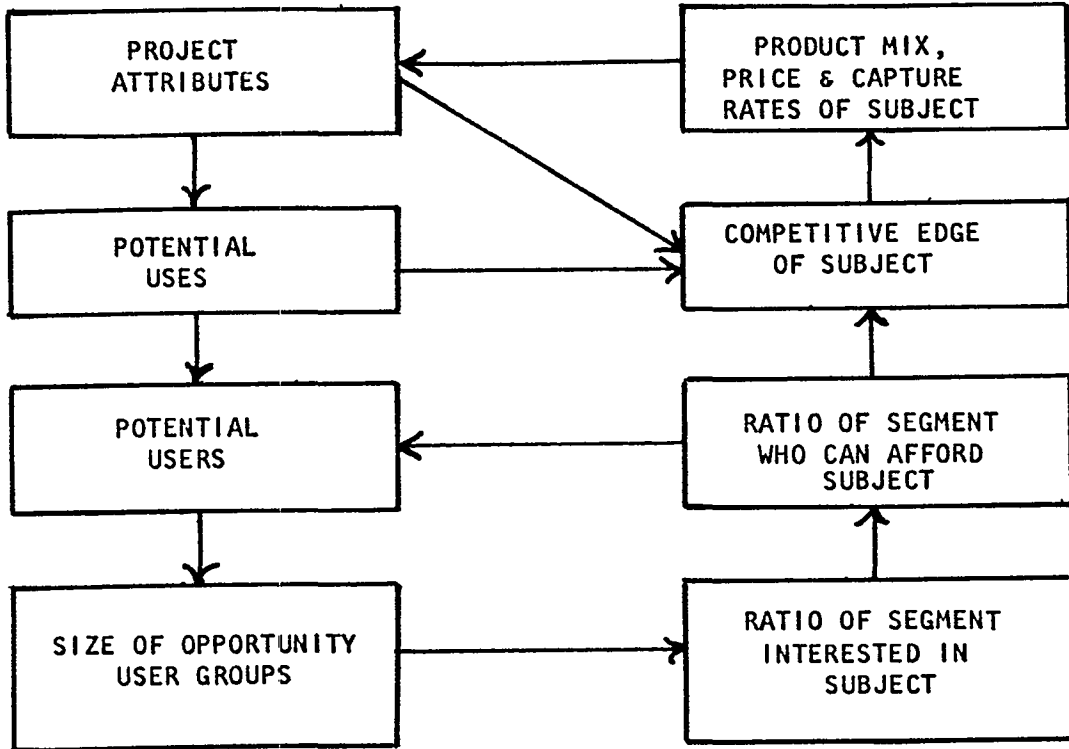
TAX SUBSIDY

	-	
	=	
	*	
	=	
	+	
	=	

OPERATING BUDGET

EXHIBIT #9

SEGMENTATION LOGIC TREE



V. Real Estate Market Analysis

Marketing research provides the key input for the market revenue worksheet and the key tests as to the acceptability of the conclusions based on the capital outlay worksheet. Since there is more plausible but overly general data in most cases than one can use, market and merchandising analysis both require a systematic approach which will discard most of the data as irrelevant at any particular time and focus the remaining information on a specific problem.

- A. Most feasibility cases require the analyst to create his own models with which to structure the data available and the data which must be researched.
 1. Remember, models organize the analyst, the report, and the client.
 - a. Models explain what you are going to do
 - b. Models make relationships and key assumptions explicit
 - c. Models permit clients to understand logic of conclusion and to test his own set of assumptions
 2. A market research model should be careful to recognize:
 - a. What are the questions?
 - b. What data is available which is relevant?
 - c. What theory is available to focus data on the questions?
 - d. How will the results be communicated?
 - e. What are the abilities of the analyst?
 - f. What is the cost benefit ratio between the model method and the question?
 3. Market data refers to aggregate data, secondary information, the easy to acquire data from census tracts, traffic counts, building permits, and so on. It is useful to scale the size of the market potential, of the opportunity area but by itself aggregate market data is relatively unimportant to the success of most projects.
 4. Merchandising data is generally primary information generated by the analyst about specific competitive projects and specific user groups which will permit an estimate of what percentage of the opportunity group can be captured for a specific project.
 - a. Absorption rates apply to aggregate market data to determine the total size or amount of market activity in terms of how many lots were sold, how many apartments in a rental range were newly rented, or how many sq. ft. of leased office space were occupied.
 - b. Capture rates are the product of merchandise research and are the ratio of the total opportunity potential which might be secured for a project or must be secured to achieve financial goals. The capture rate will reflect a careful judgment of product mix, amenities, pricing, and timing.

5. Unlike appraisals the feasibility analyst generally begins with a particular users group in mind and then relates this target to the larger economic scene. As Exhibit #9 suggests, site analysis identifies one or more probable user types or client preference or intuition as focused on a rental range and therefore market segment he may wish to serve.
 - a. The relationships between the determinance the project attributes and market requirements as to product mix, amenities, and price are reversible procedures depending on whether we have a physical property in search of a user group or a user group for which a physical property is sought or is to be designed.
 - b. A more complex flow chart of the market research process is provided in Exhibit 10.
 6. Before analyzing the relationship between the physical attributes of the site or project and merchandising requirements to reach the potential users of that site, some of the basic market research techniques appropriate to either case will be examined.
- B. Either site characteristics or required rent levels begin to suggest editing devices which will permit discarding of much aggregate data. The analyst must begin with a broadly defined scenario or model of the research problem in order to reduce aggregate data to a measure of market opportunities.
1. Most multi-tenant or multi-user land uses are susceptible to a retail trade area model. A retail model is a device analogous to establishing a retail trade area perimeter for a super market to segregate households which have a reasonable probability of using the outlet from those who don't because of convenience, distance, age, or income. Thus the analyst should establish a preliminary hypothesis for:
 - a. Primary market area to be served
 - b. Secondary market area to be served
 - c. Principal competitors
 2. Consider Exhibit 10 as a simple market model to define the size of an opportunity area in a selected county for elderly persons requiring residential care units.
 - a. For lines with asterisks the key ratios for reduction were derived from a survey of the elderly generating primary data for this county.
 - b. For example, while 37% of the elderly were financially qualified, only about 60% of those were interested in considering a residential, minimal care facility or 22% of those in the conventional housing market - hence the reduction from 19,700 to only 4,200. This chart should have showed the ratios from the survey.
 - c. Failure to convert serious interest into action was a round number based on experience of those which had marketed similar developments in the past, as was an allowance for potential customers coming from outside the county to be closer to relatives, etc.

*Exhibit pages
not included in
page numbering from
This point on →*

EXHIBIT 10
DEMAND FOR ELDERLY RESIDENTIAL CARE UNITS

Persons In County age 65 and over In 1970		21,914
Adjustment 1970-1974 to reflect the number of persons moving into the 65+ bracket and the application of mortality rates by age and sex		<u>245</u>
Estimated persons in County age 65 and over in 1974		22,159
Less persons 65+ presently in nursing and residential care facilities in County	1,792	
Less persons 65+ presently in government subsidized housing for the elderly	<u>638</u>	<u>2,430</u>
Persons age 65+ in the conventional housing market in County in 1974		19,729
* Estimated number of persons financially qualified for and seriously interested in moving into the proposed residential care development		4,270
Household equivalent (+ 1.519 persons per household)		2,811
* Less estimated number who will not convert serious interest into any form of action (50%)		1,406
* Less the percentage who, while seriously interested, said (before they heard the hypothesis) that their next home would probably be outside County (13.3% from survey questionnaire)	187	
* Less those disqualified because their current health status necessitates care beyond the scope of services to be provided in the residential care units (5.4% from survey)	<u>76</u>	<u>263</u>
Elderly households in County qualified for and seriously interested in moving into the proposed development		1,142
* Plus an allowance for those elderly households coming from outside County to enter the proposed development (10%)		<u>127</u>
Elderly households qualified for and seriously interested in moving into the proposed development		1,269
* Share of market opportunity area who stated in survey that for their next dwelling unit their first preference would be an apartment, in a highrise, midrise, or garden building:		
Highrise or midrise	28.0%	
Garden	<u>49.1</u>	
	77.1%	978
Less estimated numbers of households who might move into competitive developments available supply of units		<u>270</u>
Households that can be considered candidates for the proposed development		708
That share of households who said they would be willing to move:		
Within 1 year from now	15.6% - 110 households	
Within 2 years	31.2% - 220 "	
Within 5 years	53.4% - <u>378</u> "	
	708	
A project of 100 units requires a capture rate of:		
91% for a 1 - year absorption rate		
90% for a 2 year	" "	
14% for a 5 year	" "	

EXHIBIT 11

HOUSEHOLD GROWTH RATE - PRIMARY TRADE AREA 1970-1972
(Basis for household projection, 1974-1980)

Section	Quarter Section	Households 1970	Increase Households 1970-1972	Households 1972	Increase(%) Household 1970-1972
23	3	13	0	13	0
	4	44	0	45	0
24	1	16	3	19	9 *
	2	10	0	10	0
	3	4	0	4	0
	4	2	0	2	0
25	1	130	50	180	19 *
	2	134	8	142	3 *
	3	36	12	48	17 *
	4	323	104	427	16 * (NG)
26	1	145	4	149	1 *
	2	3	0	3	0
	3	8	0	8	0
	4	1	0	1	0
27	1	0	-	-	-
	4	125	52	177	21 *
34	1	1	0	1	0
	4	5	0	5	0
35	1	28	0	28	0
	2	8	0	8	0
	3	0	0	0	0
	4	25	0	25	0
36	1	23	3	26	7 *
	2	51	5	56	5 *
	3	9	0	9	0
	4	10	0	10	0
19	1	317	4	321	1 * (NG)
	2	240	10	250	2 * (NG)
	3	529	7	536	1 * (NG)
	4	511	1	512	0 (NG)
30	1	273	0	273	0 (NG)
	2	285	40	325	7 *
	3	113	11	124	5 *
	4	19	0	19	0
31	1	20	0	20	0
	2	142	19	161	7 *
	3	10	0	10	0
	4	7	0	7	0
TOTALS		3620	334	3954	4.6%
HGA ('70-'72) *		2609	334	2943	6.4% = G '70-'72
HNG '72 (NG)				2319	
HGA '72				1635	

EXHIBIT 12 b

I. 1974 - HOUSEHOLD PROJECTIONS

A. Primary Trade Area (PTA)

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 6.4\% \\
 \text{HNG ('72)} &= 2319 \\
 \text{HGA ('72)} &= 1635 \\
 \text{HI ('72-'74)} &= [\text{HGA ('72)}] [\text{G ('70-'72)}] \text{Na} \\
 &= (1635) (.064) (2) \\
 &= 209
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: PTA - H 1974} &= \text{HNG ('72)} + \text{HGA ('72)} + \text{HI ('72-'74)} \\
 &= 2319 + 1635 + 209 \\
 &= \underline{4163}
 \end{aligned}$$

B. Secondary Trade Area - A

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 4.8\% \\
 \text{HNG ('72)} &= 590 \\
 \text{HGA ('72)} &= 390 \\
 \text{HI ('72-'84)} &= [\text{HGA ('72)}] [\text{G ('70-'72)}] \text{Na} \\
 &= (390) (.048) (2) \\
 &= 37
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (A) - H 1974} &= \text{HNG ('72)} + \text{HGA ('72)} + \text{HI ('72-'74)} \\
 &= 590 + 390 + 37 \\
 &= \underline{1017}
 \end{aligned}$$

C. Secondary Trade Area - B

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 2.5\% \\
 \text{HNG ('72)} &= 2297 \\
 \text{HGA ('72)} &= 535 \\
 \text{HI ('72-'74)} &= [\text{HGA ('72)}] [\text{G ('70-'72)}] \text{Na} \\
 &= (535) (.025) (2) \\
 &= 27
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (B) - H 1974} &= \text{HNG ('72)} + \text{HGA ('72)} + \text{HI ('72-'74)} \\
 &= 2297 + 535 + 27 \\
 &= \underline{2858}
 \end{aligned}$$

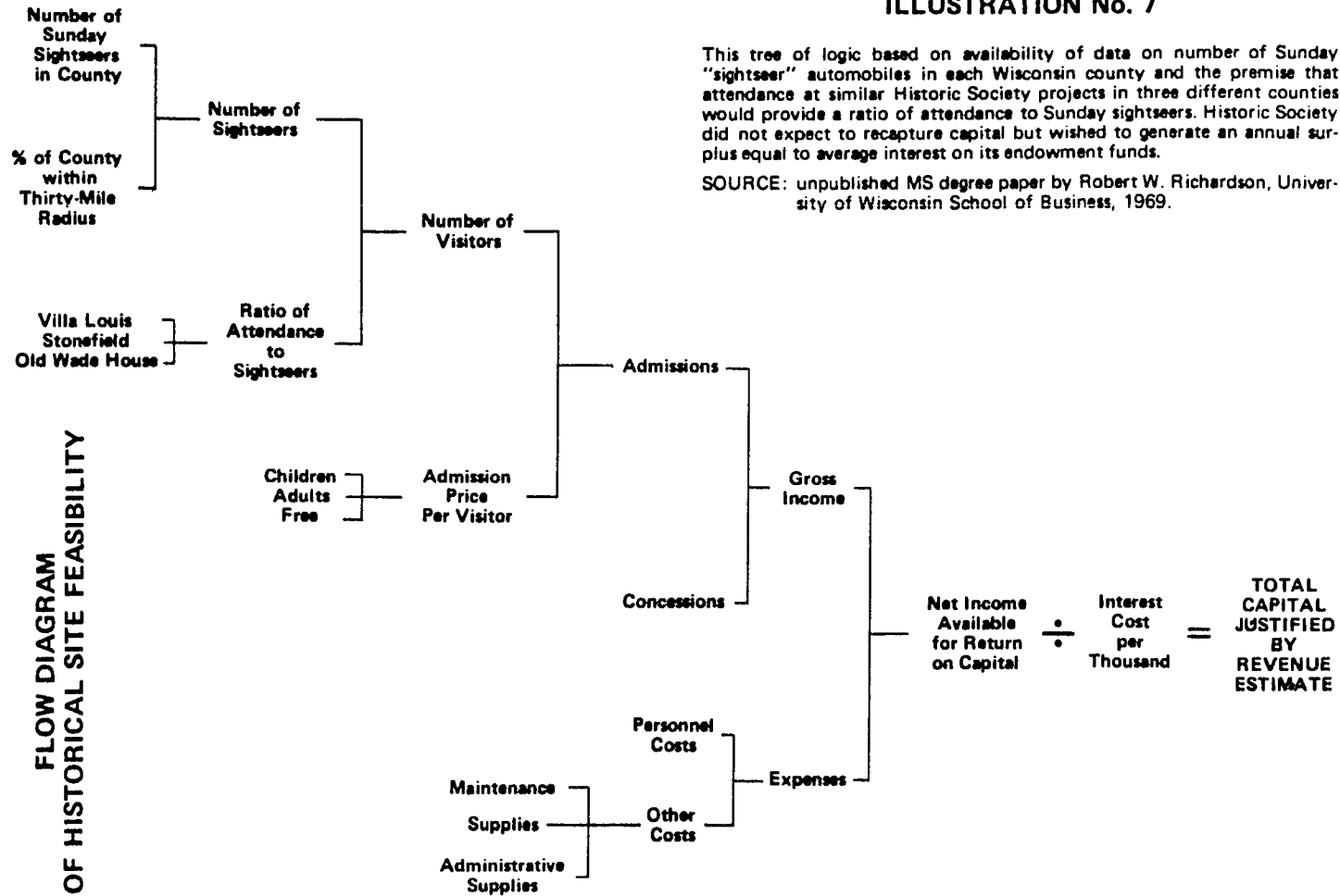
D. Secondary Trade Area - C

$$\begin{aligned}
 G ('70-'72) &= 8.5\% \\
 \text{HNG ('72)} &= 3574 \\
 \text{HGA ('72)} &= 1326 \\
 \text{HI ('72-'74)} &= [\text{HGA ('72)}] [\text{G ('70-'72)}] \text{Na} \\
 &= (1326) (.085) (2) \\
 &= 225
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (C) - H 1974} &= \text{HNG ('72)} + \text{HGA ('72)} + \text{HI ('72-'74)} \\
 &= 3574 + 1326 + 225 \\
 &= \underline{5125}
 \end{aligned}$$

EXHIBIT 13

ILLUSTRATION No. 7



Source: James A. Graaskamp. A Guide to Feasibility Analysis, (Society of Real Estate Appraisers, 1972), p.40.

3. Consider Exhibits 11-12, extended tabular models to project household growth and bank deposits for a branch bank in a planning district where population and building permit data is integrated with low-level air survey photography on a quarter-quarter section basis.
 4. Consider Exhibit 13, a flow chart to diagram the relationships by which market data is eventually converted to gross revenue. This chart is placed near the beginning of the report to communicate where the analyst is going and how he proposes to get there. The answer is given and then the assumptions are documented like footnotes to an accounting statement.
- C. Many projects require several different aggregate data models to scale the size of the opportunity or the absorption rate. A building with four types of apartment units implies four different groups of prospects; the same space may be suitable for different prospects; price differentiation may reach different groups; and the seasons may segment different customer groups. Each group requires consideration of a different aggregate demand model and capture rate model.
1. For apartments the analyst may need to consider family situation:
 - Singles:
 - . unmarried
 - . divorced
 - . widowed
 - Couples:
 - . roommates
 - . newly married
 - . married couples without children
 - . empty nesters
 - retired
 - Families:
 - . pre-school age children
 - . grammar school age children
 - . high school age children
 - . children of varied ages
 - . divorcee with children
 2. The primary trade area for an apartment building might be defined by the prospects type of current residents, location, husband's occupation, or wife's occupation, not to mention income.
 3. An office building may appeal to lawyers, accountants, trade associations, and lobbyists but the absorption rate potential will be modified by the average length of their existing lease no matter how superior the proposed new building.
 4. To construct a market demand base for a northern Wisconsin resort center, there were nine different aggregate demand models and capture rate models required:

Summer Season:

- . Vacationers by the week
- . Summer travelers by the night
- . In-house summer seminars

Off-Season: (Fall & Spring)

- . Weekend skiers on ski hill
- . Cross-country skiers
- . Snowmobilers
- . Mini-vacationers
- . Business meetings - Monday through Thursday

- G. The analyst must learn to make the best use of secondary data wherever he can find it by creating his own models and these models must show the client the logical, systematic progression from aggregate data to edited information. True, many of the initial assumptions are common sense and convenience but the error in those may not be significant as further reductions of data are made.
1. Those assumptions which are crucial become visibly apparent and become the target of more exacting research expense.
 2. Those assumptions when shown to be relevant remind the client of data in his own record system which he had not realized would be relevant.
 3. The initial models become a device for further dialogue with the client.
 4. Remember that the model should relate to the question, namely delineation of the general group of consumer and not a nose-counting census.
 5. Remember there is a difference between precision and accuracy and one can have no more accuracy than is implicit in the assumptions. Precision is simply doing the mathematics correctly.

VI. Selecting Market Targets or a Market Position Within a Defined Market Opportunity

Notwithstanding the feasibility analyst is a generalist, whose conclusions must be confirmed at a later stage of planning, the analyst is expected to place his major effort on development of a merchandising strategy designed to secure a competitive market position for the project proposal.

- A. Free enterprise is the art of creating one's own monopoly, if only for a moment, in the mind of the buyer, monopoly characteristics depend on careful market segmentation.
 1. Site and building characteristics of an existing building already provide a product profile which suggests the market segments.
 2. Preferably careful identification of the prospect will permit development of a customer profile who will be the source of a product profile that would provide the most satisfaction.
- B. As a result of merchandising research the analyst should be able to construct a hypothetical marketing program which defines:
 1. The most probable user groups and their effective demand constraints.
 2. The timing of their effective demand in the market.
 3. The competitive standard product minimum.
 4. The competitive product edge necessary for monopoly advantage
 5. Basic elements of a required promotion program
- C. To build these assumptions or marketing hypothesis the first clue to segmentation may be found in correctly understanding the essence of buyer motivation or of the activity to be housed.
 1. Retailing is a break point for goods (a warehouse grocery), or a service industry, or a theater using lighting, staging, and mood to reinforce a role played by the buyer.
 2. A restaurant may be to provide a quick food break (high turnover, pedestrian flow, conditioned ordering), or to provide recreational entertainment and consumption of an evening, or to provide a staging for business, social, or publicity roles.
 3. A motel for transients, for resorts, or for terminal traffic uses all of its facilities and location to sell a "room-night" of occupancy because that is an 80% gross margin. Anything done after that is justified by its contribution to "room-night" sales or its reduction of average cost to capture a customer per "room-night."
 4. The revenue unit may be related to the method of measuring profit of the project in question such as per acre, per camper pad, per event, per front foot of shoreline, per stool or table, etc., not to mention sq. ft., per frame at a bowling alley or per tennis court hour, or per hour of ice time.

5. Sometimes the prospect is identified by who really signs the check for a particular type of real estate.
 - a. The salesman or the management paying his travel costs
 - b. The doctor or the clinic
 - c. The district manager or the corporate real estate manager
 - d. The ticket buyer or the promoter
 - e. The bowling league, team business manager, travel agency tour guide

6. The market segment may be defined initially by the source for a prospective user list - people who share a common address, hobby, professional specialty or some other identifier.
 - a. A reverse directory or criss-cross telephone book
 - b. Building directories of comparables
 - c. Mailing lists of specialty publications
 - d. License number spotting
 - e. Guest registers
 - f. Charge account mailing addresses

- D. The objective of these approaches, revenue unit, the decision maker, the prospect list source, is to segment the user market to a specific and relatively small group of potential customers who can be surveyed to generate original and relevant information about their space needs and motivations.
 1. Unlike most consumer markets, the number of prospects is always low; think small!
 - a. Real estate is a series of micro-markets. A 24-unit building with one, two, three bedroom units has at least three sub-markets.
 - b. A 24-unit building is a \$500,000 enterprise with a \$75,000 gross sales potential from only 24 customers!

 2. A survey of existing properties and alternatives available to a selected market segment defines only the competitive standard - namely the minimum product and price necessary to be in the market.
 - a. Comparison shopping further identifies where there may be gaps in the supply of alternatives, a market opportunity gap, or where the oversupply is so significant as to portend the last competitive alternative before bankruptcy - namely price cutting.
 - b. Comparison shopping should not only identify the physical characteristics of the product and price but the nature of the promotion effort as well.
 - c. Promotion comparison should consider pedestrian and vehicle approaches, model location, furnishings, and sales people.
 - d. Review of the promotion campaign should reveal whom the competitors believe to be their prospect.

 3. A survey of users, is designed to reveal or to identify the competitive defferential attributes which would provide that monopoly element required of every successful project.

EXHIBIT 14

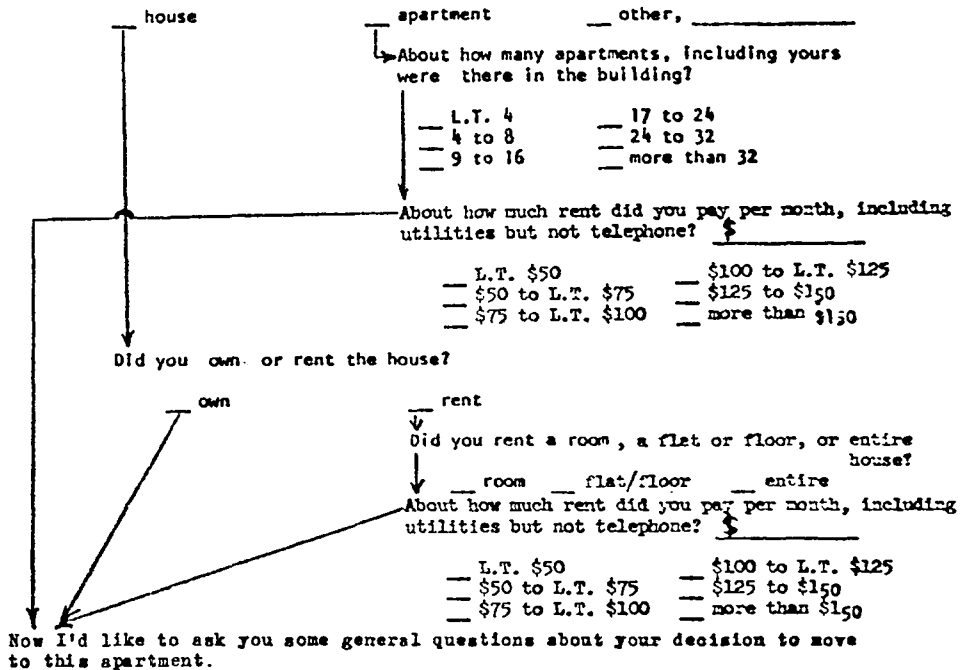
Simple Survey Formats
for Classification of Subsets & Measurement of Preference

I'd like to ask you a few questions about the place you lived just before you moved into this apartment.

5. About how many years did you live in your former home?

- less than 1 year
- 1 year - L.T. 2 years
- 2 to L.T. 5 years
- 5 to L.T. 10 years
- 10 to 15 years
- more than 15 years, _____

6. Did you live in a house or in an apartment building just before your move here?



Now I'd like to ask you some general questions about your decision to move to this apartment.

7. How did you first find out about them?

- family
- friends
- church
- Housing Authority
- newspaper
- radio
- television
- other, _____

26. How important are the following items to you?

	Very Important	Somewhat Important	Indifferent	Somewhat Unimportant	Not Important
Private Balconies or patios	()	()	()	()	()
Laundry facilities in each building	()	()	()	()	()
Washer/dryer connection in your apartment	()	()	()	()	()
Extra storage space	()	()	()	()	()
More than 1 bath	()	()	()	()	()
Carpeted stairways & hallways in common areas of apt. bldg. (Areas shared by all residents)	()	()	()	()	()
Master T.V. Antenna System	()	()	()	()	()
Children's day care center and/or nursery school nearby	()	()	()	()	()

- a. a second product of consumer survey is the ability to develop locally relevant ratios which permit disaggregation of market data into market segments and the conversion of potential numbers of people into potential dollar sales over time.
- b. Survey questions to create ratios require previous construction of a market model hypothesis.

E. Introduction to Prospect Survey

While a survey analysis appears to be a group of questions, in fact the real product is a table of data unavailable from any other source. The analyst should begin with a written mock-up of the final report logic and the specific tables which lead to a conclusion.

1. With a preliminary hypothesis as to the prospect, survey questions may be intended to provide:
 - a. Key ratios necessary for segmentation of market data already broken down by trade area, demographics, employment, etc.
 - b. Key indicators of anxieties or preferences or tradeoffs of the prospect.
 - c. Key indicators of the anxieties or preferences of non-prospects who feel a vested interest in the impact or have a significant part in the purchase process. (For example - the members of the Public Housing Authority have a different set of needs than the ultimate user, but the product is "bought" by the Board).
2. Consider the elderly housing market chart in Exhibit 11. Notice that the ratios required for market segmentation follow a logical reduction pattern. The analyst has made several working assumptions - namely that his market is over 65 and overwhelmingly from Dane County because these assumptions are both reasonable and conform to break-out points in the raw data.
3. The ratio sought by the survey follow a precise reduction pattern:
 - a. How many will consider moving?
 - b. Of those, how many would consider staying in town?
 - c. Of those, how many would consider an apartment?
 - d. Of those remaining who would consider an apartment in town, how many would consider a specific location?
 - e. Notice the reduction process defines a subset of the elderly market - a micro-market.
4. Each of these ratios suggests a specific calculation or perhaps a short table of statistics. The specific title on the table of data and its sub-columns should be written before the questions are drafted and the collection of data begun. Notice the research begins with careful definition of the questions to be answered. All answers become relevant and all unnecessary questions are avoided. These types of questions depend on knowing the precise character of secondary data available to which the ratios must be applied in the systematic model devised for the problem.

- a. Confine vocabulary to basic 1000 words; avoid lingo.
 - b. Structure questions to permit check-off, or branching to set up subsets. (See Exhibit 16)
 - c. Always test the questionnaire on half a dozen prospects or friends to reveal misunderstandings before using on the market.
 - d. Questions may take different format. (See Exhibit 14)
5. The second type of question is generally attempting to measure either anxieties or preferences. Both are dangerous survey areas for amateurs as well as professionals and it is often cheaper to subcontract these particular functions to consumer research specialists. Nevertheless, a little common sense can generate considerable useful information on the competitive edge.
- a. Probe for dissatisfaction with existing space or life style.
 - b. Probe for anxieties about uncontrollable trends and events.
 - c. Probe for desired social structure ties, real or imagined.
6. The real estate analyst can choose between systematic telephone interviews, direct mail questionnaires, and personal interviews in depth.
- a. The telephone interview may be less expensive per question and fastest but is limited in the type and amount of questions which can be asked. Rifled to a project known to the analyst, it tells much about the user profile for a good comparable without having to ask about the product which the analyst can inspect for himself. (See Exhibit 15)
 - b. A telephone survey is also useful to disaggregate census data or to estimate market penetration of a competitor (such as a retail store) into an area.
 - c. Direct mail questionnaires may cost from 5¢ to \$3 or more for each successful question; they take at least a week to prepare and test and perhaps three weeks before cutoff of additional responses. The type of question is broader and can be graphic such as alternative site maps and simple floor plans; response depends on careful construction of the mailing list, a very time consuming process. Consider the following types of questions:
 - d. The double barreled question occurs when two or more questions are combined in one so that the answer is always ambiguous as to the significance of each item but often occurs in the effort to shorten an interview or a question.
 - . Would you be at all uneasy if people of a different religion or race were to move in next to your home?
 - . As you see it, what are some of the good points and the bad points of the present Governor of this state?
 - e. Sensitive questions on family income should be asked at the end of the interview while the opening questions should be of more general interest. When a question about income is asked the response should permit some degree of obliqueness by the respondent.

EXHIBIT #15

Telephone Survey Script - Elderly Housing

Prepared and executed by James R. DeLisle, June, 1974

PRE-SURVEY INFO.

Survey Turnkey Elderly Housing Triangle Project Madison, Wis.

Code of Interviewer [] 1 [] 2 [] 3 [] 4 [] 5

PROJECT CODE Code of Project

[] Braxton [] Romnes [] Tenney Park

Sex of Respondent [] Male [] Female

INTRO.

Hello, my name is . We are conducting a survey of residents of elderly housing apartments so that we may identify those features of apartment design and planning that are satisfying to residents, as well as those that are irritations.

The purpose of seeking your responses to these questions, is to provide a base of information from you --the real experts on housing for the elderly-- upon which we can make specific recommendations to developers of the proposed elderly housing project on the Triangle Urban Renewal Area, here in Madison. This information will result in an improved living environment in the proposed housing project. Your responses are confidential and you will not be identified as an individual.

Would you mind answering a few questions ? Thank you.

PRIOR LIVING EXPERIENCE

1. When did you move into your present home ?

- [] 1960 to 1965 [] 1971 to 1972 [] 1966 to 1968 [] 1973 to 1974 [] 1969 to 1970

2. What type of home did you live in before moving to your present home ?

- [] one family house [] 1 to 4 unit apartment bldg. [] two family house [] 5 or more unit apt. bldg. [] other [] other

3. How long did you live in your former home ?

- [] less than 6 month [] 2 - 5 years [] 6 mo. to 1 year [] 5 -10 years [] 1 - 2 years [] Over 10 years

Note: (read options only when arrow is shown as in question # 2)

4. Was your previous home:

- owned by you (or you and your spouse)
- owned by your family (or your spouses' family)
- occupied without cash rent
- rented by you (or you and your spouse)

How much was your rent each month ?

- less than \$50
- \$50 to 75
- \$75 to 100
- \$100 to 125
- \$125 to 175
- \$175 or more

Did your rent include:

- Electricity yes no
 - Heat yes no
 - Water yes no
 - Gas yes no
- DNA

Present Living Experience

YOUR RESPONSES TO THE FOLLOWING QUESTIONS WILL TELL US WHAT YOU FEEL IS IMPORTANT IN AN APARTMENT SPECIFICALLY DESIGNED FOR THE ELDERLY

5. Which of the rooms in the apartment should be the largest, second largest, and third largest ?

- | | Largest | Second Largest | Third Largest |
|---|--|--|--|
| <ul style="list-style-type: none"> <input type="radio"/> Kitchen-Dining area <input type="radio"/> Living Room <input type="radio"/> Bedroom | <input type="radio"/>
<input checked="" type="radio"/>
<input type="radio"/> | <input type="radio"/>
<input type="radio"/>
<input checked="" type="radio"/> | <input checked="" type="radio"/>
<input type="radio"/>
<input type="radio"/> |

6. Is your present home:

- too large for your needs
- too small for your needs
- just right for your needs

7. How many people live with you in your apartment ?

- none
- one
- two
- three
- four
- five or more

If you could change your present apartment by making one room larger and one room smaller;

8. Would you make your:

- ↓ LR larger; BR smaller or/
 BR larger; LR smaller or/
 leave them like they are

9. Would you make your:

- ↓ LR larger; K-D area smaller or/
 K-D area larger; LR smaller or/
 leave them like they are

*OPTIONAL UNIT
FEATURES*

If you had to select one of the following:

10. Would you prefer:

- ↓ A dining area in the kitchen or/
 A dining area next to the kitchen

11. Would you prefer:

- ↓ A bathroom door opening to bedroom only or/
 A bathroom door opening to living room area only

12. Would you prefer:

- ↓ A large closet area in the bedroom or/
 A large closet area in the living-dining-kitchen area

13. Would you prefer:

- ↓ A balcony or
 Slightly larger apartment size

14. Would you prefer:

- ↓ Larger closet space or
 More open space in your apartment

OPTIONAL PROJECT FEATURES

15. If you had the choice, would you want:

- A larger apartment and less community space or/
 A smaller apartment and more community space or/
 make no change
-

If you had to select one of the following:

16. Would you prefer:

- One large room with a music area, T.V. area, conversation area, and a small library or/
 Several smaller separate rooms for each of these activities, in addition to a central lounge

17. Would you prefer:

- A special lounge area for children of guests or/
 A larger main lounge
-

18. Should there be a separate lounge for women only ^{No} and a separate lounge for men only ^{No}

19. Is there a craft or hobby room in the building you live in now ?

- yes
 no

20. 'Would you like' a crafts room ?

- no
 yes

21. For what crafts would you use the craft room ?

- | | |
|--|---|
| <input type="checkbox"/> Pottery | <input type="checkbox"/> woodworking |
| <input type="checkbox"/> knitting and crocheting | <input type="checkbox"/> sewing |
| <input type="checkbox"/> painting | <input type="checkbox"/> copper enameling |
| <input checked="" type="checkbox"/> weaving | <input type="checkbox"/> other _____ |
| <input type="checkbox"/> photography | <input type="checkbox"/> other _____ |

22. How many times a week would you use the room ?

- | | |
|--|--|
| <input type="checkbox"/> less than once a week | <input type="checkbox"/> More than 3 times |
| <input type="checkbox"/> once | <input type="checkbox"/> Never |
| <input type="checkbox"/> twice | |
| <input checked="" type="checkbox"/> three | |

23. Should the crafts room be:

- one large room for all crafts or/
 several smaller rooms for each craft

Project Mass / Scale Misc.

THE FOLLOWING QUESTIONS WILL PROVIDE US WITH INFORMATION AS TO WHAT YOU FEEL IS ESSENTIAL IN A HIGH RISE BUILDING FOR THE ELDERLY. WHILE WE REALIZE THAT SOME PEOPLE DO NOT LIKE HIGH RISE STRUCTURES IT IS ESSENTIAL THAT WE FIND OUT HOW WE CAN BEST DESIGN SUCH A BUILDING TO MINIMIZE THE IRRITATIONS AND MAXIMIZE THE BENEFITS TO THE RESIDENTS.

If you had to live in a high rise building:

24. Would you prefer:

- A six story building with 16 apartments and neighbors on each floor or/
 A ten story building with 10 apartments and neighbors on each floor

25. Would you prefer:

- A six story building with less open space outside or/
 A ten story building with more open space outdoors

26. Would you prefer:

- ↓ a large laundry room with adjacent bathrooms on one floor or/
↓ smaller laundry facilities (one washer and dryer) on each floor

27. Would you prefer:

- ↓ small lounges on each floor or/
↓ a larger main lounge

28. Would you prefer:

- An enclosed roof top sun deck or/
 a larger patio area outdoors

ADDITIONAL
COMMENTS

ARE THERE ANY ADDITIONAL SUGGESTIONS YOU WOULD LIKE TO MAKE ?

more exits in case of fire

THANK YOU FOR YOUR HELP. GOODBYE.

- . The respondent can select a range of income or perhaps enter the answer with a letter A, B, etc. in place of a dollar amount.
 - . If socio-economic questions are generally short and direct, they are a welcome contrast to the time consuming and thought provoking questions which preceded them.
- f. Contingency questions are those which are asked or skipped depending on the respondent's answer to a preceding question. The survey should be as simple to follow as a well designed road map for an interviewer or a respondent. For example:

EXHIBIT 16

(112) Generally speaking, in politics do you usually think of yourself as a Republican, a Democrat, an Independent, or what?

/Republican/ /Democrat/
 ↓ ↓
 (112a) Would you say that you are a strong or not so strong (Republican; Democrat)?

/Independent/ /Other/ /No pref./
 ↓ ↓ ↓
 (112c) In general, do you consider yourself closer to the Republican or to the Democratic party?

/Strong/ /Not so strong/
 ↓ ↓
 (112b) Was there ever a time when you thought of yourself as closer to the other party?

/Rep./ /Dem./ /Neither/ /No pref./
 ↓ ↓ ↓ ↓
 (112d) Was there ever a time when you thought of yourself as a Republican or Democrat?

/Yes/ /No/

/Yes/ /No/

- g. Personal interviews in depth permit questions using photographs with colors and styles. Expensive and time consuming, it assumes precious qualification of the interviewee as a typical prospect.
5. Processing of surveys can involve simple tallies or counts, simple subdividing of responses into subcategories, or preferably organization of the questionnaire to permit key punching or cross tabbing or statistical analysis by computer processing. The problem of identification requires:

- a. Coding by colored paper, colored return envelope, stamp on self-addressed stamped envelope to reflect geographic area, building address, type of respondent, original mailing list source, etc. Careful organization before mailing solves most processing problems.
- b. Beware of code numbers if you promised anonymity; give them the option of identifying the respondent, etc.
- c. Always identify yourself as an analyst (but not the project or the client), providing a phone number or an address where the interviewee can find you. It will generate both presale prospect lists and some primary unexpected political participation by others.

INCOME PROPERTY LENDING-
WHAT TO LOOK FOR

SCHOOL OF MORTGAGE BANKING

COURSE II. STANFORD UNIVERSITY
August 13-17, 1979

Outline prepared by
Professor James A. Graaskamp
Chairman, Real Estate and Urban Land Economics
University of Wisconsin

I. Basic Concepts and Definitions

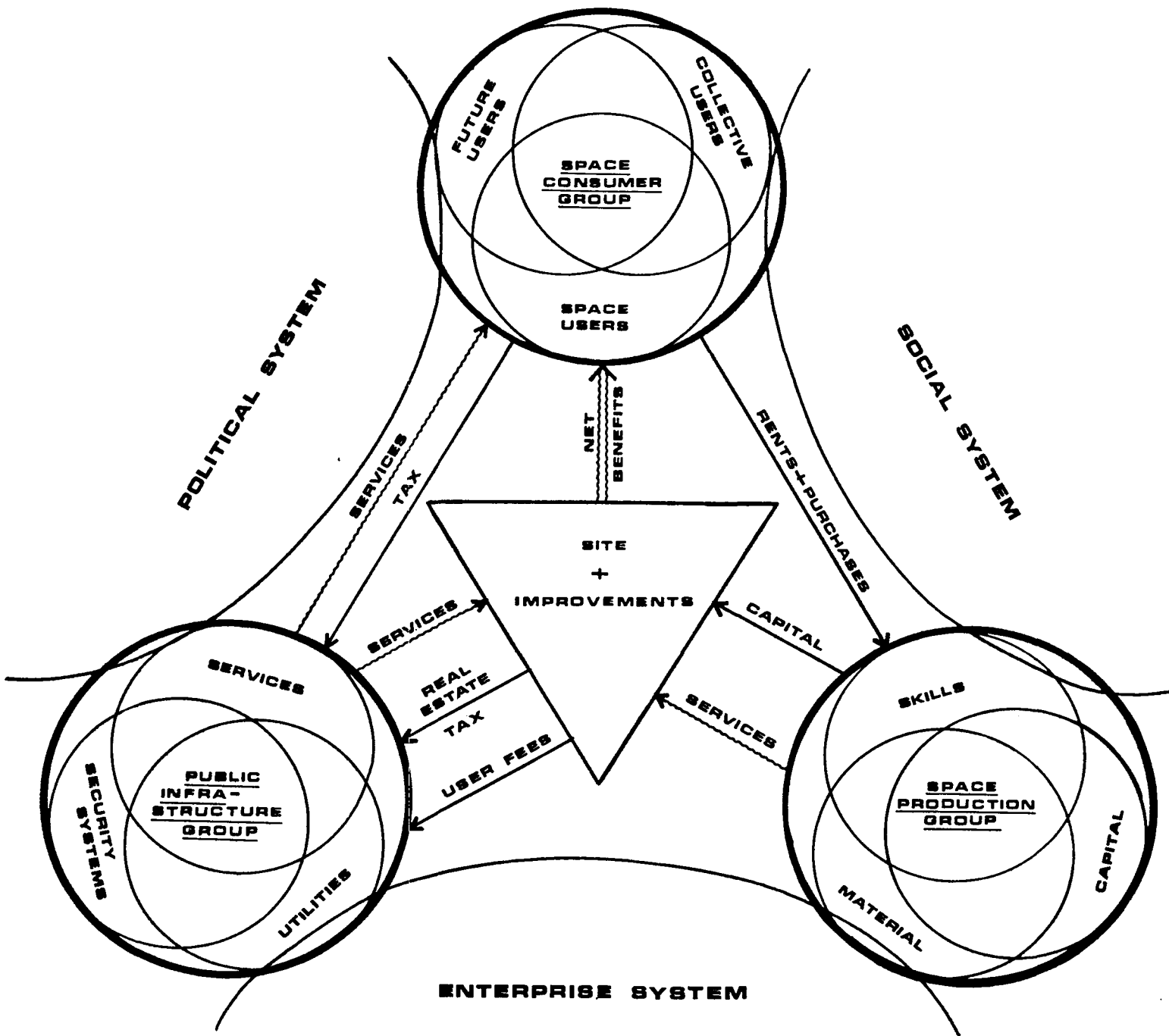
- A. Real estate is a tangible product - defined as artificially delineated space with a fourth dimension of time referenced to a fixed point on the face of the earth.
1. Real estate is a space-time unit, room per night, apartment per month, square foot per year, tennis court hours, or a condominium for two weeks in January at a ski slope.
 2. To the space-time abstraction can be added special attributes to house some form of activity.
 3. Improvements from survey market to city layouts to structures define space.
 4. Legal contracts and precedents define time.
 5. Rights of use are defined by public values, court opinions.
 6. Private rights to use are those which remain after the public has exercised its rights to control, to tax, or to condemn.
- B. A real estate project is cash cycle business enterprise which combines a space-time product with certain types of management services to meet the needs of a specific user. It is the process of converting space-time needs to money-time dimensions in a cash economy.
1. A real estate business is any business which provides expertise necessary to relate space-time need to money-time requirements and includes architects, brokers, city planners, mortgage bankers, and all other special skills.
 2. The true profit centers in real estate are in the delivery of services and cash capital.
 3. Equity ownership is the degree to which one enterprise controls or diverts cash from another real estate enterprise.
 4. Public has direct ownership to the degree real estate taxes take a percentage of tenant income in excess of service cost.
 5. Consumer must view space as a total consumption system involving direct cost, surface cost, transportation cost and negative income of risk.
 6. The best real estate project is the one which has the lowest net present value of cost as the sum of cost to the consumer production sector and public sector.

- C. The real estate process is the dynamic interaction of three groups, space users (consumers), space producers, and the various public agencies (infrastructures) which provide services and capital to support the consumer needs. (See Exhibit 1)
1. Each of these three decision groups represent an enterprise, an organized undertaking. All are cash cycle enterprises constrained by a need for cash solvency, both short and long term.
 2. A desirable real estate solution occurs when the process permits maximum satisfaction to the consumer at a price that he can afford within the environmental limits of land while permitting the consumer, producer, and the government cash cycle to achieve solvency - cash break even at a minimum, after full payment for services rendered.
 3. Solvency of the total process, not value, is the critical issue.
 4. Land is an environmental constraint and not a profit center.
 5. Land provides access to a real estate business opportunity and is not the opportunity itself. Real estate business wants to control land to create a captive market for services.
- D. Land is the point where demand and supply forces find cash solvency. Location is a manufactured attribute. Site attributes are exploited to create location by analyzing:
1. Static attributes.
 2. Legal-political attributes.
 3. Linkage attributes.
 4. Dynamic attributes.
- E. Recognition of the fact that profit maximization must be limited by concerns for physical environment and community priorities for land use has resulted in redefinition of the most basic concept in appraisal; i.e. highest and best use, in the authorized terminology handbook sponsored by the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers. Compare the 1971 definition with that for 1975:

Highest and best use concept-

"A valuation concept that can be applied to either the land or improvements. It normally is used to mean that use of a parcel of land (without regard to any improvements upon it) that will maximize the owner's wealth by being the most profitable use of the land. The concept of highest and best use can also be applied to a property which has some improvements upon it that have a remaining economic life. In this context, highest and best use can refer to that use of the existing improvements which is most profitable to the owner. It is possible to have two different highest and best uses for the same property: one for the land ignoring the improvements; and another that recognizes the presence of the improvements.:

p. 57, Real Estate Appraisal Principles and Terminology, Second Edition, Society of Real Estate Appraisers 1971.



THE REAL ESTATE PROCESS

"Highest and Best Use: That reasonable and probable use that will support the highest present value, as defined, as of the effective date of the appraisal. Alternatively, that use, from among reasonably probable and legal alternative uses, found to be physically possible, appropriately supported, financially feasible, and which results in highest land value. The definition immediately above applies specifically to the highest and best use of land. It is to be recognized that in cases where a site has existing improvements on it, the highest and best use may very well be determined to be different from the existing use. The existing use will continue, however, unless and until land value in its highest and best use exceeds the total value of the property in its existing use. Implied within these definitions is recognition of the contribution of that specific use to community environment or to community development goals in addition to wealth maximization of individual property owners. Also implied is that the determination of highest and best use results from the appraisers judgement and analytical skill, i.e., that the determined from analysis represents an opinion, not a fact to be found. In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value) another appropriate term to reflect highest and best use would be most probable use. In the context of investment value an alternative term would be most profitable use."

Real Estate Appraisal Terminology, Edited by Byrl H. Boyce, Ph.D. SRPA, Ballinger Publishing Co., Cambridge, Mass. 1975

- F. The purchase of a piece of real estate today involves the acceptance of a great many assumptions about the future. Those who take care to validate these assumptions in a period of transition as to public land use control tend to have the most successful investment.
1. Business decisions today make explicit recognition of their assumptions and the need to act under conditions of uncertainty.
 2. Business risk is the difference between assumptions about the future and realizations, the proforma budget and the end of the year income statement.
 3. Risk management is the control of variance between key assumptions and realizations.
 4. An appraisal is a set of assumptions about the future productivity of a property under conditions of uncertainty.
- G. The concept of highest and best use of land was a commodity concept which did not consider externalities adequately. It is being replaced by concepts of most fitting use and the concept of most probable use.
1. The most fitting use is that use which is the optimal reconciliation of effective consumer demand, the cost of production, and the fiscal and environmental impact on third parties.
 2. Reconciliation involves financial impact analysis on "who pays" and "who benefits" - thus the rash of debate on how to do impact studies.

3. The most probable use will be something less than the most fitting use depending on topical constraints imposed by current political factors, the state of real estate technology, and short term solvency pressures on consumer, producer, or public agency.
 4. Most probable use means that an appraisal is first a feasibility study of alternative uses for a site in search of a user, an investor, and in need of public consent.
- H. In seeking the most fitting and most probable use, the inner city planner and private property appraiser must interact to determine how community objectives and consumer - production sector solvency can be achieved simultaneously.
1. A real estate decision has only two basic forms. Either a site is in search of a use and consumer with the ability to pay, or a consumer, need or use with a defined ability to pay is seeking some combination of space-time attributes he can afford.
 2. The individual consumer with needs and a budget is the drive wheel.
 3. The public sector represents the community owned consumer service delivery system, seeking to minimize marginal cost to the consumer and average cost to the community at large.
 4. The production sector responds to a derivative demand for engineering and management expertise.
- I. Critiquing the form and adequacy of a real estate solution is analogous to the artistic concept of judging the success of an art object by relating form of the solution to the context to which it was created.
1. Context includes those elements which are fixed, given, or objectives and to which any solution must adapt.
 2. Form giving elements are those variables within the artists control, i.e. options or alternatives at a particular time.
 3. A solution is judged for its correctness or success in terms of the degree of fit of the form proposed to the context.
 4. Feasibility analysis is concerned with the degree of fit or the extent of misfit between a proposed course of action and the context within which it must operate or fit.
 5. Success therefore depends on how appropriately the problem is defined; testing feasibility depends primarily upon accurate and comprehensive definition of the context.

II. What Does Feasibility Mean?

- A. The concept of feasibility is elusive and much abused. Combining the systems concept of enterprise under conditions of uncertainty and the physical design concept of fit leads to the following definition:

"A real estate project is "feasible" when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources."

- B. The problem of defining objectives and measuring success depends almost entirely on correctly defining the problem and values of the client. The majority of enterprises are not solely interested in rate of return on investment or lowest cost. Most decisions must fit a combination of success "measures" with each decision maker weighting the overall importance of each item differently. Examples of such measures would be:

1. A check list of physical attributes.
2. A check list of critical linkage attributes.
3. A check list of dynamic behavioral attributes.
4. A check list of attributes or services (given weighted point scores).
5. Financial ratios measuring risk, such as cash break-even, rate of capital recapture, loan ratios or sensitivity to specified contingencies.
6. Probability distributions of alternative outcomes and standard error of the estimate.
7. Psychological gratifications.
8. Specified legal attributes.
9. Measures of impact on environment.

- C. The definition also implies uncertainty - a reasonable likelihood of succeeding. That statement is deliberately short of a statistical probability statement. However, analytical judgements can produce some verbal probability statements (that horse is a nag while the black stallion is an odds on favorite) so that the measures of success should lend themselves to explicit recognition of the degree of uncertainty with which success might be achieved.

- D. The general theory of the management process for any enterprise can be converted to real estate semantics for feasibility: (see Exhibit 2)

Values, objectives, policy	Strategic format
Search for opportunity alternatives	Market trend analysis
Selection of an opportunity	Merchandising target with monopoly character
Program to capture opportunity	Legal-political constraints
	Ethical-aesthetic constraints
	Physical-technical constraints
	Financial constraints
Construction of program	Project development
Operation of program	Property management
Monitoring and feedback	Real estate research

- E. The analyst must also identify and measure or define the limited resources of the client in terms of personnel, expertise, available cash resources, and the time line of expectations and commitment since time available to achieve the solution is often a critical resource and constraint relative to alternative choices.
- F. These basic elements and definitions then lead to a correct title for the report required. Most feasibility reports go wrong on the title page because the analyst did not clearly understand to which elements of context and form his report was to be addressed. Seldom does the analyst do a complete feasibility study as a single report on his own. Components may be provided by others and the sequence of sets may differ in each case depending on how the consultant understands the client. Therefore, a report should be entitled as one of the following:
1. Strategy study: selection of objectives, tactics, and decision criteria.
 2. Market analysis: economic base studies or other related aggregate data review.
 3. Merchandising studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
 4. Legal studies: opinion on potential legal constraints, model contracts or forms of organization, and political briefs.
 5. Compatibility studies of project to community planning, conservation standards, or other public policies.
 6. Engineering, land planning, and architectural studies.
 7. Financial studies: economic modeling, capital budgets, present value and discounted cash flow forecasts, rate of return analysis, financial packages.
- G. What is the relationship of feasibility analysis to appraisal? An appraisal report like a feasibility report is a model of a decision process. In fact, an appraisal report is a sharply qualified (fictitious) feasibility study of a site in search of a market. The key differences are what question each model attempts to answer and who asked the question.
1. The appraiser locks himself to a model when he states the purpose of the appraisal is to determine market value on a given date. The appraiser assumes the viewpoint of a prudent economic man using the traditional three economic approaches to value with the objective of maximizing economic surplus of a single parcel real estate enterprise.
 2. What if value is not the central question? What if economic surplus is 0, but profit centers above the net income line are positive? What if motivations are personal, subjective, or in a broader portfolio viewpoint than offered by a single parcel?
 3. The feasibility analyst sees the project from the viewpoint of a particular client with unique objectives; the appraiser works with an undefined, generalized economic man; more recently a pro-filed group called "most probable buyer."

III. Elements of Financial Feasibility

- A. Identification of selected profit centers
 - B. Specification of the common denominator - a time line - schedule of outlays and receipts
 - C. The capital budget (source & application)
 - 1. Construction costs
 - 2. Carrying costs
 - D. Operating budgets (source & application)
 - 1. Pattern of sales revenues
 - 2. Fixed management costs
 - 3. General sales costs and investments
 - E. Financing plan
 - 1. Credit amounts and terms
 - 2. Equity amounts and terms
 - 3. Holding power
 - F. Profits classified as to type and tax
 - 1. Cash from operations
 - 2. Cash from capital gains
 - 3. Cash surplus from financing
 - 4. Cash from tax savings on other income
 - 5. Cash from reduction or shift of fixed outlays
 - 6. Indirect non-cash benefits
 - G. Selected measures of profitability
 - 1. Definition of investment
 - 2. Definition of profit
 - H. Selected measures of risk
 - 1. Payback periods
 - 2. Capacity for variance
 - 3. Variance control
- IV. Modern management defines risk as the potential variance between expectations and realizations, i.e., between pro forma prospects and balance sheet and P & L statements.
- A. Dynamic risks can produce profit or loss and are best controlled by the finesse of management execution of a plan.
 - B. Static risks are those which can only cause a loss due to surprise upset of a plan.

- C. Risk management has two objectives:
1. Conservation of existing enterprise assets despite surprise events
 2. Realization of budgeted expectations despite surprise events
- D. The process of risk management involves:
1. Identification of significant exposures to loss
 2. Estimation of potential loss frequency and severity
 3. Identification of alternative methods to avoid loss
 4. Selection of a risk management method
 5. Monitoring execution of risk management plan
- E. The risk management process is both a philosophy of inquiry or analysis and a checklist of management concern, which is attempting to answer systematically 'WHAT IF...?' questions, to anticipate surprise and to provide for a response or adjustment in advance of the contingency.
- F. Identification of significant exposures to loss can begin by using standard business documents as reminders, such as:
1. Review of balance sheet accounts
 2. Review of profit and loss statement accounts
 3. Review of business organization or function chart
 4. Review of elements of financial feasibility analysis
- G. Significant has to do with potential loss frequency, loss severity, and degree of uncertainty.
1. Very frequent and minor become expense accounts
 2. Less frequent but predictable and major become reserves or budget allowances.
 3. Infrequent, uncertain but very severe become issues of risk management.
 4. A 50/50 probability is the most uncertain outcome.
- H. The alternative methods of avoiding loss which everyone subconsciously uses include:
1. Eliminate risk exposure
 2. Reduce frequency or severity of loss (diversification or mortgage loan closing process)
 3. Combine risks to increase predictability (reserves for expense)
 4. Shift risk by contract (subcontracts or escalator clauses)
 5. Shift risk by combination (diversification) by contract (insurance)
 6. Limit maximum loss (corporate shell or limited partnership)
 7. Hedging (sale and leaseback, options, contingent sales)

- I. Risk management concepts leads to understanding of the true essence of a mortgage contract and an equity commitment
 1. A mortgage is a classic straddle in two markets for the borrower; it is a call on a space-time commodity in a rising market and a put to the lender in a falling market. It is also a straddle in the money market. The mortgage contract is a risk management agreement to provide coverage of static risks and an imperfect straddle on the dynamic risks. Protection for the lender is revenue to the borrower, negative incentives, and salvage.
 2. Equity ownership is the degree to which you can divert cash flow and maintain control within an acceptable level of risk avoidance.
- J. Real estate investment attributes ranked for mortgage banking influence (*most susceptible to mortgage banking influence)
 1. Degree of political exposure
 2. Degree of channelled demand (monopoly market positioning)*
 3. Degree of management intensiveness
 4. Degree of product design for life cycle costing*
 5. Degree of financial projection refinement
 6. Degree of contract stabilization of variance (risk management)*
 7. Impact on estate plan
- V. Income property loan analysis is concerned with the following elements, listed in order of importance.
 - A. Source and quality of income.
 1. Single or multi tenant
 2. Economic characteristics of tenant and lease
 3. Economic characteristics of market area
 - B. Management capacity of borrower.
 1. Ability to construct
 2. Ability to market
 3. Ability to operate
 4. Holding power in terms of reserve cash and character
 - C. Cash flow as affected by physical design for original cost, marketing, and operational efficiency.
 - D. Legal-political risks of development, leases, and foreclosure.
 - E. Special terms for letter of commitment and loan agreement.
 - F. Appraised value of the property.

VI. The three "C's" of credit are seldom stated in the proper order of priority-CHARACTER, CAPACITY, and CREDIT.

A. Character is a matter of motivation. Mortgage loans depend for their primary security on the democratic principle of the greatest good for the greatest number, i.e. "old number one." The motivation or security is based on a strategy which mixes pleasure, pain, and bail-out in an appropriate balance. Any income loan must have two out of three.

B. Capacity is specifically the cash flow required to justify the capital budget, including payments to the mortgage lender and payments to the equity position. The mortgage loan has a marriage of financial interests won't work unless both parties are satisfied.

C. Capacity is a matter of cash flow planning in the following order:

1. Pretax revenue justified capital budget
2. Pretax sensitivity analysis
3. After tax cash flow incentives
4. Structuring of legal ownership entity to provide holding power

D. There are two points of departure for analysis:

1. Given the capital budget, it is necessary to convert to the required rents necessary to support the project and cash return objectives. Specified budgets converted to required rents is often called the front door approach.
2. Given market rent per unit, it is necessary to establish the maximum justified capital budget. Targeted market rents converted to justified investment can be allocated to various development budgets and is called the back door approach.

E. Refer to the front door approach exhibit and example, oversimplified for purposes of illustration (EXHIBIT II and III).

F. Refer to the back door approach exhibit and example (EXHIBIT IV and V).

1. The back door approach is the preferred response to the market although lenders typically enter the scene after the capital budget is set.
2. Note that the back door approach can be driven by a default ratio or a debt cover ratio which are dynamic risk concepts rather than loan to value ratio which is a static regulatory concept.

G. The back door approach is the essence of the FHA 2013 form, state housing finance approach to projects where revenue is defined by the FMR rules, or even purchase of an existing property subject to long term rents, renovation, etc.

1. It is possible to detail the back door approach for any type of project by simply setting up tabs in a flow chart fashion as suggested by the example for a 236 project.
2. Another way to view the flow charts is in the nature of two basic programmable formulas:

$$\text{Gross rent} = \frac{\text{TRC} * \text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}$$

$$\text{Justified project budget} = \frac{\text{GR}}{\frac{\text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}}$$

Where:

TRC = Total replacement cost; LTV = loan to value ratio
 MC = mortgage constant; CC = Cash on cash for equity cash
 ER = expense ratio; RET = real estate tax ratio
 VR = Vacancy ratio; RR = reserve ratio

H. Preliminary financial analysis begins with a variety of ratios which are intended to reveal the tolerance of the project for variance in key assumptions, the ability absorb surprise, as well as dynamic risk. These ratios become the objective of further refinement through sensitivity analysis. Among the important ratios we have used so far are:

1. Absorption rate:

$$\frac{\text{Units sold or leased per period}}{\text{Total supply of units available for sale or lease}} = \text{Absorption rate}$$

2. Capture rate:

$$\frac{\text{Units in specific project sold or leased per period}}{\text{Total competitive units sold or leased per period}} = \text{Capture rate}$$

3. Vacancy ratio:

$$\frac{\text{Space unit} * \# \text{ of units} * \text{rental payment periods per year} * \text{turnover rate} * \text{rental payments lost} * \text{rent}}{\# \text{ of units} * \# \text{ of payments} * \text{rent per period}} = (\text{gross rent})$$

1-bedroom apartments x 20 x 50% turnover x 1 month lost | \$200/mo.

$$\frac{20 * 50\% * 1 * 200}{20 * 12 * 200}$$

$$\frac{2000}{48000} = \frac{1}{24} = 4.2\%$$

4. Expense ratio:

$$\frac{\text{Expenses}}{\text{Gross rent}}$$

5. Net income ratio:

$$\frac{\text{Net income}}{\text{Purchase price} + \text{additional costs}} = \text{Overall rate or cap rate}$$

(should be = debt service constant or higher)

6. Debt cover ratio:

$$\frac{\text{Net operating income}}{\text{Debt service}}$$

7. Default ratio:

$$\frac{\text{Operating expenses} + \text{real estate taxes} + \text{short term debt} + \text{interest} + \text{principal payments}}{\text{Gross rent}}$$

8. Loan to value ratio:

$$\frac{\text{Mortgage loan balance}}{\text{Purchase price}}$$

9. Cash on cash:

$$\frac{\text{Net income} - \text{debt service} - \text{reserves} + \text{refinancing surplus}}{\text{Total capital budget} - \text{original mortgage balance}}$$

- I. Understanding the basic ratios leads to manual or data processing of sensitivity ratios; it is important to remember that projecting specific returns is not a forecast for the future; it is intended to be a basis for measuring the tolerance of the financial parameters for variance from the initial assumptions and identifying the thresholds of insolvency or incompatibility with competitive markets. Refer to John Nabors model in EXHIBIT VI.
- J. If project makes sense before tax, then it is useful to refine analysis for projections over time or an after tax basis.
1. Accounting tabs for after tax income (See EXHIBIT VII).
 2. Accounting tabs for after tax sale proceeds (See EXHIBIT VIII).
 3. Basic pattern of after tax financial analysis requires a pattern of assumptions (See EXHIBIT IX).

K. After tax spendable cash ratios include:

1. Distributable cash from operation:

Cash throwoff
- income taxes
 Cash from operations
 - reserves
- repayment of working capital loans
 = Distributable cash

2. Spendable cash attributable to real estate:

Distributable cash
 + tax savings to other income
+ surplus from refinancing
 = Spendable cash

3. After tax sale proceeds:

+ return of working capital
+ liquidation of sinking funds
 = cash reversion

4. Return on net worth B/4 tax:

Cash throwoff + change in net worth
 Net worth at end of previous period

5. Return on net worth after tax:

Spendable cash + (change in net worth - change in taxes on sale)
 Net worth at end of previous period - taxes on sale

6. Payback ratio:

Cumulative spendable cash
 Original budget - original debt
 + amount of personal guarantees

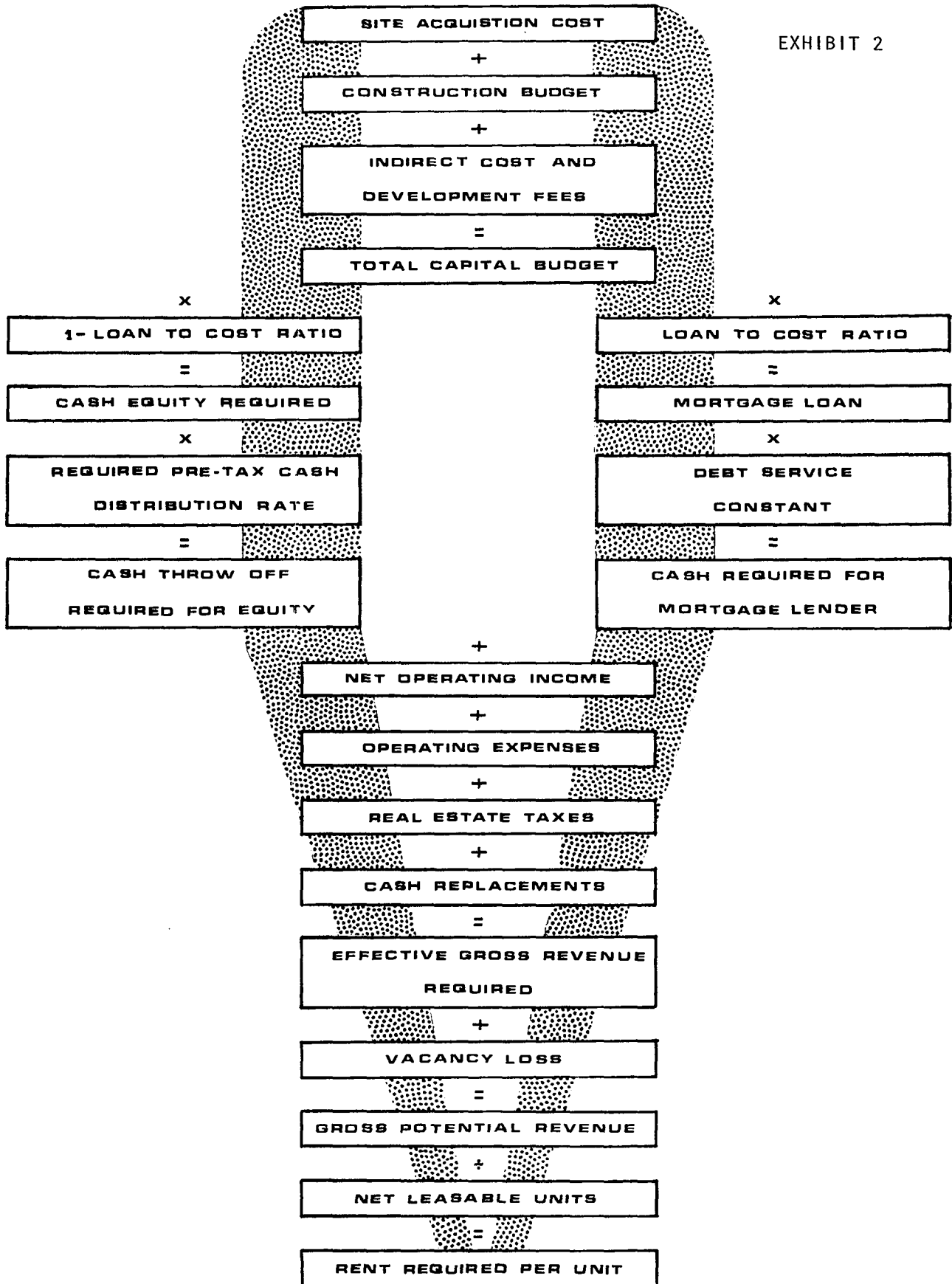
L. Precise definition of cash returns is critical in the negotiation of participating loans and partnerships

1. Defining effective gross, net income or cash throwoff with a participation loan

2. Defining base number in which general partner will share

REVENUE REQUIRED BY CAPITAL BUDGET LOAN TO COST RATIO APPROACH

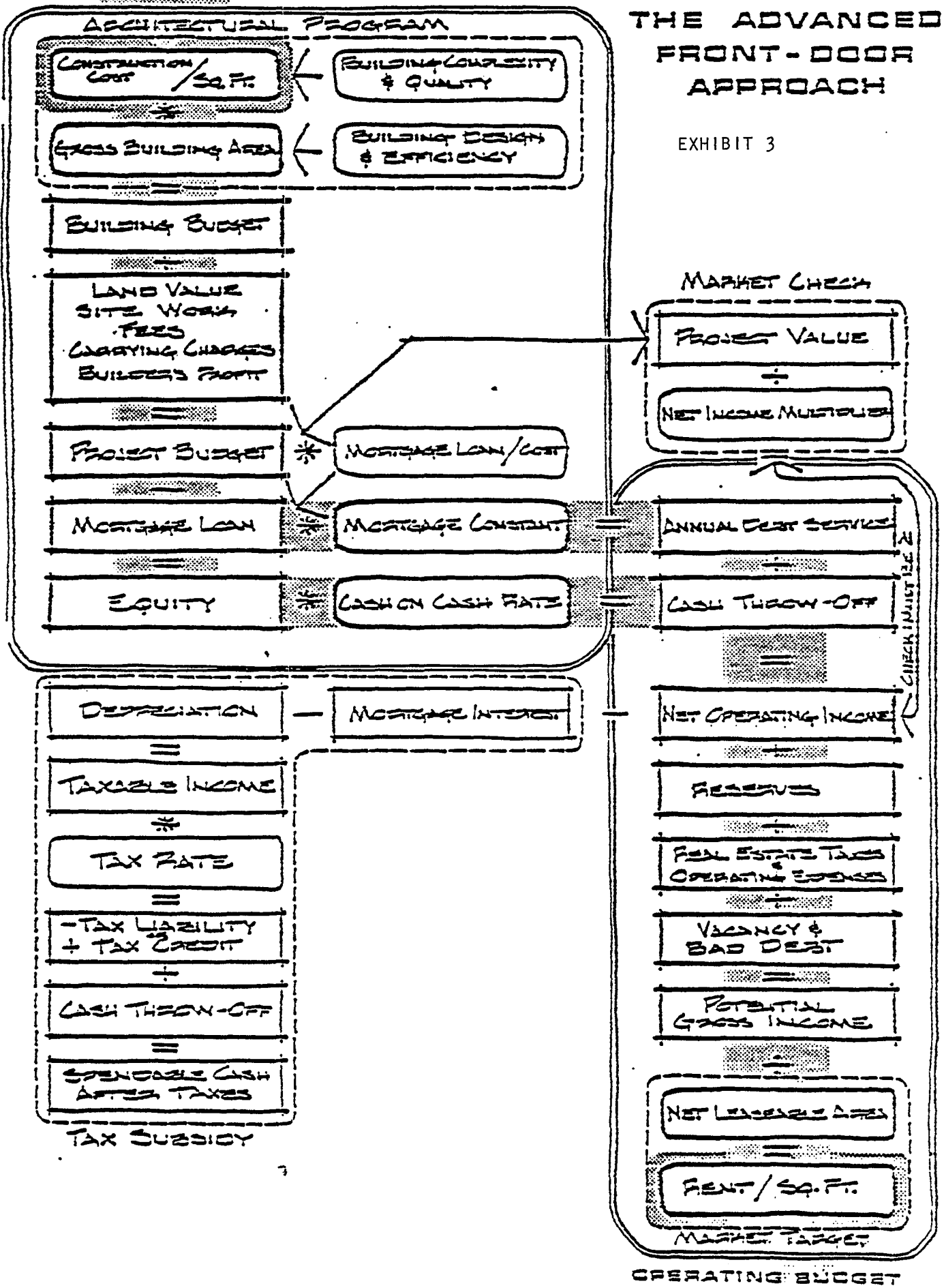
EXHIBIT 2



CAPITAL BUDGET

THE ADVANCED FRONT-DOOR APPROACH

EXHIBIT 3



OPERATING BUDGET

CAPITAL BUDGET

ARCHITECTURAL PROGRAM

26,893

*

41,040

1,103,700

728,750

1,232,450

.80

985,960

.096552

246,490

.075

THE ADVANCED FRONT-DOOR APPROACH

EXHIBIT 3 cont'd.

MARKET CHECK

95,196.41

18,486.75

113,683.16

8,539

59,657

10,140

192,019.16

35,589

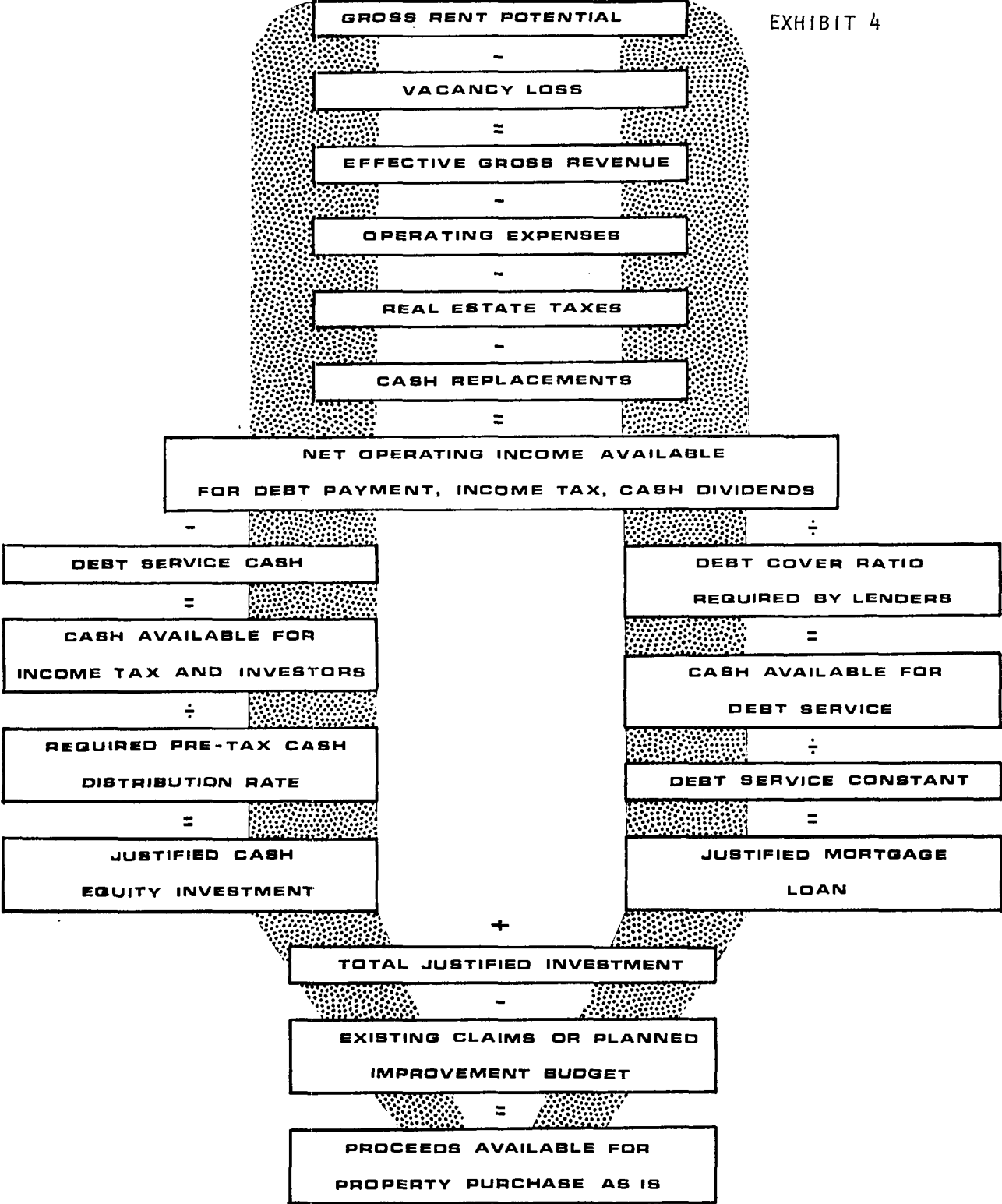
5.39

TAX SUBSIDY

OPERATING BUDGET

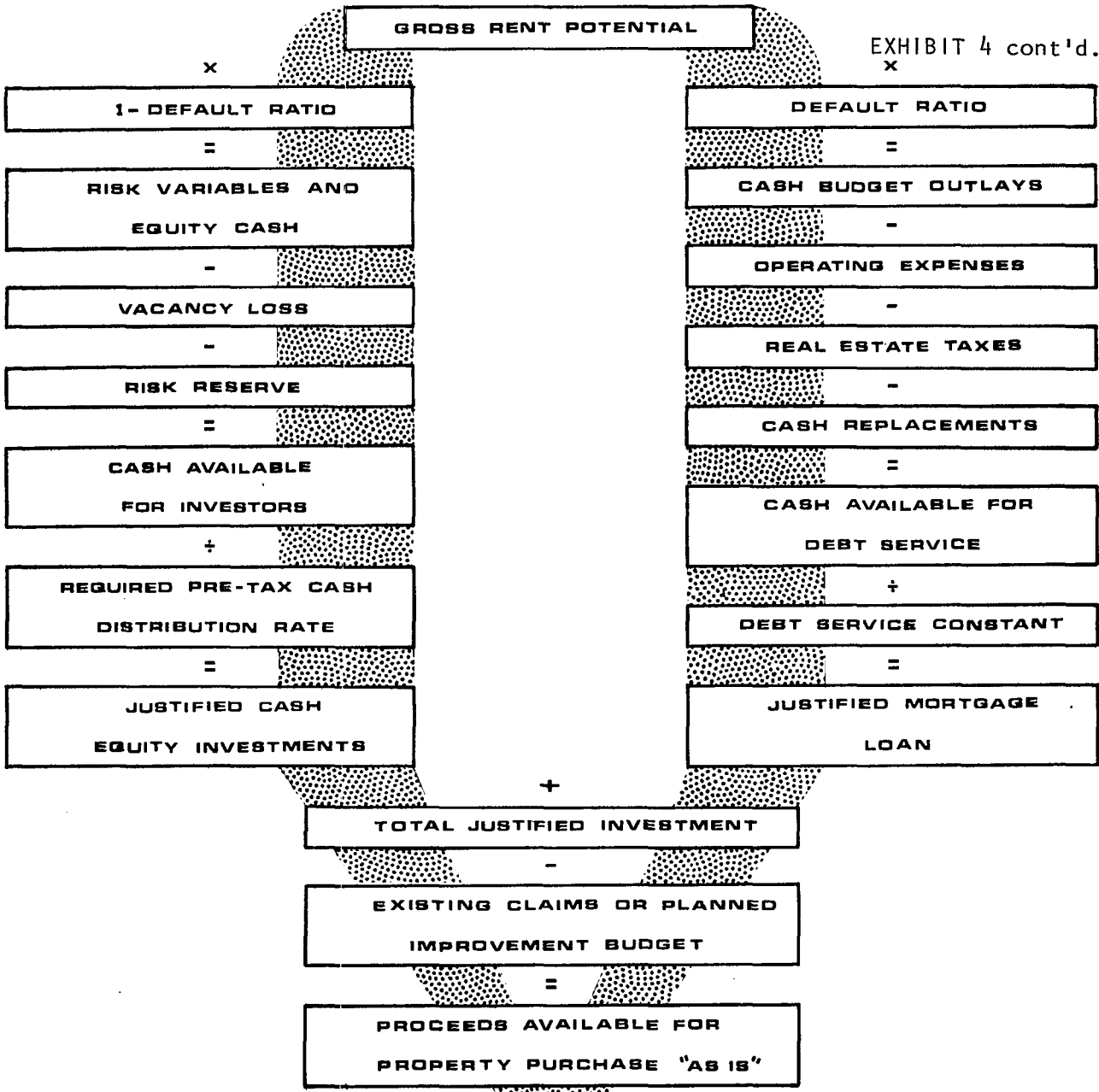
REVENUE JUSTIFIED CAPITAL BUDGET DEBT COVER RATIO APPROACH

EXHIBIT 4



REVENUE JUSTIFIED CAPITAL BUDGET DEFAULT RATIO APPROACH

EXHIBIT 4 cont'd.
x



OPERATING BUDGET

MARKET SURVEY

BACK-DOOR APPROACH

EXHIBIT 5

MARKET CHECK

$\$6.00 \leftarrow .50 / \text{sq. ft. / mo.}$
 $600 \text{ sq. ft.} = \$300 / \text{mo. RENT}$

3600
 $-$
 2880
 $=$
 720
 $-$
 180 (5% VACANCY)
 $-$
 180 (RESERVES)
 $=$

360
 $+$
 $\$116$
 $-$
 $\$1200$
 $=$
 $\$724$
 $*$
 $.30$
 $=$
 $\$217$ TAX SAVINGS TO OTHER INCOME
 $+$
 360 CASH THROWOFF
 $=$
 $577 / 4,500 = 12.8\%$

80% DEFAULT POINT
 $\$720$ EXPENSES
 520 REAL ESTATE TAXES

$\$1640$ DEBT SERVICE
 $.096552$
 $.08$ CASH ON CASH

00683% 1 = YR
 $9\% / 30 \text{ YR MORTGAGE}$
 $.096552$

3600
 $-$
 $\$1,420$ VACANCY, TAXES, & EXPENSES
 $=$
 $\text{NOI} = 2180$
 $*$
 $\times 10 = 21,800$

$\$16,985$
 $+$
 $4,500$
 $=$
 $\$21,485$
 $-$
 $\$2,000$ (LAND)
 $1,948$ (DEVELOPMENT FEE)
 $3,222$ (INDIRECT AT 15%)
 $7,170$

$14,314$
 $=$
 700 GROSS FEET PER UNIT
 $\$20.45 / \text{sq. ft.}$

CAPITAL BUDGET

85% EFFICIENCY

CASH FLOW PRO FORMA USING PARAMETER NORMS

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

EXHIBIT 6

DATE: 2/14/1977
 BLDG: 1
 RUN : 1

GROSS SQUARE FEET IN BUILDING: 700.
 BUILDING EFFICIENCY : 85.0 PCT
 NET LEASEABLE SQUARE FOOTAGE : 595.

LAND AND CONSTRUCTION COST : \$ 19500.
 LOAN TO COST RATIO : 75.0 PCT
 ORIGINAL LOAN AMOUNT : \$ 14625.

EQUITY REQUIREMENT : \$ 4875.

PERMANENT INTEREST RATE : 9.000 PCT
 TERM OF LOAN 30. YEARS

ANNUAL DEBT SERVICE : \$ 1412.

ANNUAL DOLLARS

GROSS INCOME :	595. SQ FT AT \$ 6.00	3570.
LESS: VACANCY OF	5.00 PCT	179.

GROSS ADJUSTED INCOME		3392.
PLUS: PARKING INCOME		150.
PLUS: OTHER INCOME		24.
GROSS EFFECTIVE INCOME		3566.
LAND LEASE EXPENSE		100.
OPERATING EXPENSES:	595. SQ FT AT \$ 2.76	1642.

NET OPERATING INCOME		1823.
DEBT SERVICE (9.66 PCT CONSTANT)		1412.

PRO FORMA CASH FLOW		411.

RETURN ON EQUITY 8.43 PERCENT

DEBT SERVICE COVERAGE: 1.291

DEFAULT RATIO : 83.48 PERCENT

EXHIBIT 6 continued

LOAN DATA FOR EACH SET OF FINANCIAL CONDITIONS

AMOUNT FINANCED \$ 14625. EQUITY \$ 4875.

LOAN RATIO 75.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE		PER UNIT
			ANNUAL	PER SQ FT	
9.000	30.0	9.6555	1412.	2.3733	
9.250	30.0	9.8721	1444.	2.4265	
9.500	30.0	10.0903	1476.	2.4802	
8.500	30.0	9.2270	1349.	2.2680	
8.000	30.0	8.8052	1288.	2.1643	

AMOUNT FINANCED \$ 15600. EQUITY \$ 3900.

LOAN RATIO 80.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE		PER UNIT
			ANNUAL	PER SQ FT	
9.000	30.0	9.6555	1506.	2.5315	
9.250	30.0	9.8721	1540.	2.5883	
9.500	30.0	10.0903	1574.	2.6455	
8.500	30.0	9.2270	1439.	2.4192	
8.000	30.0	8.8052	1374.	2.3086	

AMOUNT FINANCED \$ 16575. EQUITY \$ 2925.

LOAN RATIO 85.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE		PER UNIT
			ANNUAL	PER SQ FT	
9.000	30.0	9.6555	1600.	2.6897	
9.250	30.0	9.8721	1636.	2.7501	
9.500	30.0	10.0903	1672.	2.8109	
8.500	30.0	9.2270	1529.	2.5704	
8.000	30.0	8.8052	1459.	2.4529	

AMOUNT FINANCED \$ 17550. EQUITY \$ 1950.

LOAN RATIO 90.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE		PER UNIT
			ANNUAL	PER SQ FT	
9.000	30.0	9.6555	1695.	2.8480	
9.250	30.0	9.8721	1733.	2.9119	
9.500	30.0	10.0903	1771.	2.9762	
8.500	30.0	9.2270	1619.	2.7216	
8.000	30.0	8.8052	1545.	2.5972	

AMOUNT FINANCED \$ 18525. EQUITY \$ 975.

LOAN RATIO 95.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE		PER UNIT
			ANNUAL	PER SQ FT	
9.000	30.0	9.6555	1789.	3.0062	
9.250	30.0	9.8721	1829.	3.0736	
9.500	30.0	10.0903	1869.	3.1415	
8.500	30.0	9.2270	1709.	2.8728	
8.000	30.0	8.8052	1631.	2.7414	

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	1 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT (595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
ØTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

VACANCY ALLOWANCE

	3.00 PCT	4.00 PCT	5.00 PCT	7.00 PCT	10.00 PCT
	-----	-----	-----	-----	-----
RENTAL RATES					
ANNUAL \$/SQ FT					
\$ 4.80	-210.	-239.	-267.	-324.	-410.
\$ 5.40	136.	104.	72.	8.	-89.
\$ 6.00	483.	447.	411.	340.	233.
\$ 6.60	829.	790.	750.	672.	554.
\$ 7.20	1175.	1132.	1089.	1004.	875.

BREAKEVEN RENTAL RATES

VACANCY ALLOWANCE

	3.00 PCT	4.00 PCT	5.00 PCT	7.00 PCT	10.00 PCT
	-----	-----	-----	-----	-----
RENTAL RATES					
ANNUAL \$/SQ FT					
	5.16	5.22	5.27	5.39	5.57

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	1 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
QTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

VACANCY ALLOWANCE

	<u>3.00 PCT</u>	<u>4.00 PCT</u>	<u>5.00 PCT</u>	<u>7.00 PCT</u>	<u>10.00 PCT</u>
RENTAL RATES					
ANNUAL \$/SQ FT					
\$ 4.80	-210.	-239.	-267.	-324.	-410.
\$ 5.40	136.	104.	72.	8.	-89.
\$ 6.00	483.	447.	411.	340.	233.
\$ 6.60	829.	790.	750.	672.	554.
\$ 7.20	1175.	1132.	1089.	1004.	875.

BREAKEVEN RENTAL RATES

VACANCY ALLOWANCE

	<u>3.00 PCT</u>	<u>4.00 PCT</u>	<u>5.00 PCT</u>	<u>7.00 PCT</u>	<u>10.00 PCT</u>
RENTAL RATES					
ANNUAL \$/SQ FT					
	5.16	5.22	5.27	5.39	5.57

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	2 OF 12
SITE :	2000. SQUARE FEET	DATE 2-14-1977
BUILDING :	700. SQUARE FEET	BLDG 1
EFFICIENCY:	85.00 PCT(595. SQ FT)	
LOAN RATIO:	75.00 PCT OF \$ 19500.	
LOAN :	\$ 14625.	
EQUITY :	\$ 4875.	
FINANCING :	30. YEARS 9.000 PCT	
VACANCY :	5.00 PCT OF LEASEABLE	
QTR INCOME:	\$ 174. ANNUALLY	RUN 1
LAND LEASE:	\$ 100.	

ANNUAL CASH FLOWS

ANNUAL EXPENSE RATES PER SQ FT

\$ 2.40	\$ 2.64	\$ 2.76	\$ 3.00	\$ 3.36
-----	-----	-----	-----	-----

RENTAL RATES
ANNUAL \$/SQ FT

\$ 4.80	-53.	-196.	-267.	-410.	-624.
\$ 5.40	286.	143.	72.	-71.	-285.
\$ 6.00	625.	483.	411.	268.	54.
\$ 6.60	965.	822.	750.	608.	393.
\$ 7.20	1304.	1161.	1089.	947.	732.

BREAKEVEN RENTAL RATES

ANNUAL EXPENSE RATES PER SQ FT

\$ 2.40	\$ 2.64	\$ 2.76	\$ 3.00	\$ 3.36
-----	-----	-----	-----	-----

RENTAL RATES
ANNUAL \$/SQ FT

4.89	5.15	5.27	5.53	5.90
------	------	------	------	------

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS

PAGE 3 OF 12

SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
VACANCY :	5.00 PCT OF LEASEABLE		
GTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

FINANCING PARAMETERS

S	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
T	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

RENTAL RATES
ANNUAL \$/SQ FT

\$	4.80	-267.	-299.	-331.	-204.	-143.
\$	5.40	72.	40.	8.	135.	196.
\$	6.00	411.	380.	348.	474.	536.
\$	6.60	750.	719.	687.	813.	875.
\$	7.20	1089.	1058.	1026.	1152.	1214.

BREAKEVEN RENTAL RATES

FINANCING PARAMETERS

S	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
T	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

RENTAL RATES
ANNUAL \$/SQ FT

5.27	5.33	5.39	5.16	5.05
------	------	------	------	------

EXHIBIT 6 continued
PRØ FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	3 OF 12
SITE : 2000. SQUARE FEET	DATE	2-14-1977
BUILDING : 700. SQUARE FEET	BLDG	1
EFFICIENCY: 85.00 PCT(595. SQ FT)		
LOAN RATIO: 75.00 PCT OF \$ 19500.		
LOAN : \$ 14625.		
EQUITY : \$ 4875.		
VACANCY : 5.00 PCT OF LEASEABLE		
ØTR INCOME: \$ 174. ANNUALLY	RUN	1
EXPENSES : \$ 2.76 PER SQ FT		
LAND LEASE: \$ 100.		

ANNUAL CASH FLOWS

		FINANCING PARAMETERS				
S	T	30. YEARS	30. YEARS R	30. YEARS	30. YEARS	30. YEA R
		9.00 PCT	9.25 PCT C	9.50 PCT	8.50 PCT	8.00 P
		-----	-----	-----	-----	-----

RENTAL RATES
ANNUAL \$/SQ FT

\$ 4.80	-267.	-299.	-331.	-204.	-143.
\$ 5.40	72.	40.	8.	135.	196.
\$ 6.00	411.	380.	348.	474.	536.
\$ 6.60	750.	719.	687.	813.	875.
\$ 7.20	1089.	1058.	1026.	1152.	1214.

BREAKEVEN RENTAL RATES

		FINANCING PARAMETERS				
S	T	30. YEARS	30. YEARS R	30. YEARS	30. YEARS	30. YEA R
		9.00 PCT	9.25 PCT C	9.50 PCT	8.50 PCT	8.00 P
		-----	-----	-----	-----	-----

RENTAL RATES
ANNUAL \$/SQ FT

5.27	5.33	5.39	5.16	5.05
------	------	------	------	------

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS

PAGE 4 OF 12

SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
VACANCY :	5.00 PCT OF LEASEABLE		
QTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

RENTAL RATES
ANNUAL \$/SQ FT

\$ 4.80	-393.	-355.	-330.	-305.	-267.
\$ 5.40	-94.	-44.	-11.	22.	72.
\$ 6.00	205.	267.	308.	349.	411.
\$ 6.60	505.	578.	627.	677.	750.
\$ 7.20	804.	890.	947.	1004.	1089.

BREAKEVEN RENTAL RATES

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

RENTAL RATES
ANNUAL \$/SQ FT

5.59 5.49 5.42 5.36 5.27

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	5 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
FINANCING :	30. YEARS 9.000 PCT		
VACANCY :	5.00 PCT OF LEASEABLE		
ØTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

RENTAL RATES
 ANNUAL \$/SQ FT

\$ 4.80	-267.	-361.	-455.	-550.	-644.
\$ 5.40	72.	-22.	-116.	-210.	-305.
\$ 6.00	411.	317.	223.	129.	35.
\$ 6.60	750.	656.	562.	468.	374.
\$ 7.20	1089.	995.	901.	807.	713.

BREAKEVEN RENTAL RATES

LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

RENTAL RATES
 ANNUAL \$/SQ FT

5.27	5.44	5.61	5.77	5.94
------	------	------	------	------

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	5 OF 12
SITE :	2000. SQUARE FEET	DATE 2-14-1977
BUILDING :	700. SQUARE FEET	BLDG 1
EFFICIENCY:	85.00 PCT(595. SQ FT)	
FINANCING :	30. YEARS 9.000 PCT	
VACANCY :	5.00 PCT OF LEASEABLE	
QTR INCOME:	\$ 174. ANNUALLY	RUN 1
EXPENSES :	\$ 2.76 PER SQ FT	
LAND LEASE:	\$ 100.	

ANNUAL CASH FLOWS

LOAN TO COST RATIO

	75.00 PCT	80.00 PCT	85.00 PCT	90.00 PCT	95.00 PCT
	-----	-----	-----	-----	-----
RENTAL RATES					
ANNUAL \$/SQ FT					
\$ 4.80	-267.	-361.	-455.	-550.	-644.
\$ 5.40	72.	-22.	-116.	-210.	-305.
\$ 6.00	411.	317.	223.	129.	35.
\$ 6.60	750.	656.	562.	468.	374.
\$ 7.20	1089.	995.	901.	807.	713.

BREAKEVEN RENTAL RATES

LOAN TO COST RATIO

	75.00 PCT	80.00 PCT	85.00 PCT	90.00 PCT	95.00 PCT
	-----	-----	-----	-----	-----
RENTAL RATES					
ANNUAL \$/SQ FT					
	5.27	5.44	5.61	5.77	5.94

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	6 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
REVENUE :	\$ 6.00 PER SQ FT		
QTR INCOME:	\$ 174. ANNUALLY	RUN	1
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

ANNUAL EXPENSE RATES PER SQ FT

\$ 2.40	\$ 2.64	\$ 2.76	\$ 3.00	\$ 3.36
-----	-----	-----	-----	-----

VACANCY RATES

3.00 PCT	697.	554.	483.	340.	126.
4.00 PCT	661.	518.	447.	304.	90.
5.00 PCT	625.	483.	411.	268.	54.
7.00 PCT	554.	411.	340.	197.	-17.
10.00 PCT	447.	304.	233.	90.	-124.

BREAKEVEN RENTAL RATES

ANNUAL EXPENSE RATES PER SQ FT

\$ 2.40	\$ 2.64	\$ 2.76	\$ 3.00	\$ 3.36
-----	-----	-----	-----	-----

VACANCY RATES

3.00 PCT	4.79	5.04	5.16	5.41	5.78
4.00 PCT	4.84	5.09	5.22	5.47	5.84
5.00 PCT	4.89	5.15	5.27	5.53	5.90
7.00 PCT	5.00	5.26	5.39	5.64	6.03
10.00 PCT	5.17	5.43	5.57	5.83	6.23

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	7 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT (595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
REVENUE :	\$ 6.00 PER SQ FT		
QTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

FINANCING PARAMETERS

	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

VACANCY RATES

3.00 PCT	483.	451.	419.	545.	607.
4.00 PCT	447.	415.	383.	510.	571.
5.00 PCT	411.	380.	348.	474.	536.
7.00 PCT	340.	308.	276.	402.	464.
10.00 PCT	233.	201.	169.	295.	357.

BREAKEVEN RENTAL RATES

FINANCING PARAMETERS

	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

VACANCY RATES

3.00 PCT	5.16	5.22	5.27	5.06	4.95
4.00 PCT	5.22	5.27	5.33	5.11	5.00
5.00 PCT	5.27	5.33	5.39	5.16	5.05
7.00 PCT	5.39	5.44	5.50	5.27	5.16
10.00 PCT	5.57	5.62	5.68	5.45	5.33

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	7 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
REVENUE :	\$ 6.00 PER SQ FT		
GTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

FINANCING PARAMETERS					
	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

VACANCY RATES					
3.00 PCT	483.	451.	419.	345.	607.
4.00 PCT	447.	415.	383.	310.	571.
5.00 PCT	411.	380.	348.	274.	536.
7.00 PCT	340.	308.	276.	202.	464.
10.00 PCT	233.	201.	169.	129.	357.

BREAKEVEN RENTAL RATES

FINANCING PARAMETERS					
	30. YEARS	30. YEARS	30. YEARS	30. YEARS	30. YEA
		R			
	9.00 PCT	9.25 PCT	9.50 PCT	8.50 PCT	8.00 P
		C			

VACANCY RATES					
3.00 PCT	5.16	5.22	5.27	5.06	4.95
4.00 PCT	5.22	5.27	5.33	5.11	5.00
5.00 PCT	5.27	5.33	5.39	5.16	5.05
7.00 PCT	5.39	5.44	5.50	5.27	5.16
10.00 PCT	5.57	5.62	5.68	5.45	5.33

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	8 OF 12
SITE :	2000. SQUARE FEET	DATE 2-14-1977
BUILDING :	700. SQUARE FEET	BLDG 1
LOAN RATIO:	75.00 PCT OF \$ 19500.	
LOAN :	\$ 14625.	
EQUITY :	\$ 4875.	
FINANCING :	30. YEARS 9.000 PCT	
REVENUE :	\$ 6.00 PER SQ FT	
VACANCY :	5.00 PCT OF LEASEABLE	
QTR INCOME:	\$ 174. ANNUALLY	RUN 1
LAND LEASE:	\$ 100.	

ANNUAL CASH FLOWS

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	394.	464.	510.	556.	625.
\$ 2.64	268.	333.	375.	418.	483.
\$ 2.76	205.	267.	308.	349.	411.
\$ 3.00	79.	136.	174.	212.	268.
\$ 3.36	-110.	-60.	-28.	5.	54.

BREAKEVEN RENTAL RATES

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	5.21	5.11	5.04	4.98	4.89
\$ 2.64	5.46	5.36	5.29	5.23	5.15
\$ 2.76	5.59	5.49	5.42	5.36	5.27
\$ 3.00	5.84	5.74	5.67	5.61	5.53
\$ 3.36	6.22	6.12	6.05	5.99	5.90

EXHIBIT 6 continued

PRØ FØRMA CASH FLØW TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	9 OF 12
SITE : 2000. SQUARE FEET	DATE	2-14-1977
BUILDING : 700. SQUARE FEET	BLDG	1
LØAN RATIO: 75.00 PCT ØF \$ 19500.		
LØAN : \$ 14625.		
EQUITY : \$ 4875.		
REVENUE : \$ 6.00 PER SQ FT		
VACANCY : 5.00 PCT ØF LEASEABLE		
ØTR INCØME: \$ 174. ANNUALLY	RUN	1
EXPENSES : \$ 2.76 PER SQ FT		
LAND LEASE: \$ 100.		

ANNUAL CASH FLØWS

BUILDING EFFICIENCY (PCT ØF GRØSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LØAN TØ CØST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

FINANCING

30.YR 9.00PCT	205.	267.	308.	349.	411.
30.YR 9.25PCT	174.	235.	277.	318.	380.
30.YR 9.50PCT	142.	204.	245.	286.	348.
30.YR 8.50PCT	268.	330.	371.	412.	474.
30.YR 8.00PCT	330.	391.	433.	474.	536.

BREAKEVEN RENTAL RATES

BUILDING EFFICIENCY (PCT ØF GRØSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LØAN TØ CØST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

FINANCING

30.YR 9.00 PCT	5.59	5.49	5.42	5.36	5.27
30.YR 9.25 PCT	5.65	5.55	5.48	5.42	5.33
30.YR 9.50 PCT	5.72	5.61	5.54	5.48	5.39
30.YR 8.50 PCT	5.46	5.36	5.30	5.24	5.16
30.YR 8.00 PCT	5.34	5.25	5.19	5.13	5.05

EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS

PAGE 9 OF 12

SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
REVENUE :	\$ 6.00 PER SQ FT		
VACANCY :	5.00 PCT OF LEASEABLE		
QTR INCOME:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100.		

ANNUAL CASH FLOWS

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

FINANCING

30-YR 9.00PCT	205.	267.	308.	349.	411.
30-YR 9.25PCT	174.	235.	277.	318.	380.
30-YR 9.50PCT	142.	204.	245.	286.	348.
30-YR 8.50PCT	268.	330.	371.	412.	474.
30-YR 8.00PCT	330.	391.	433.	474.	536.

BREAKEVEN RENTAL RATES

BUILDING EFFICIENCY (PCT OF GROSS)

75.00 PCT 78.00 PCT 80.00 PCT 82.00 PCT 85.00 PCT
LOAN TO COST RATIO

75.00 PCT 80.00 PCT 85.00 PCT 90.00 PCT 95.00 PCT

FINANCING

30-YR 9.00 PCT	5.59	5.49	5.42	5.36	5.27
30-YR 9.25 PCT	5.65	5.55	5.48	5.42	5.33
30-YR 9.50 PCT	5.72	5.61	5.54	5.48	5.39
30-YR 8.50 PCT	5.46	5.36	5.30	5.24	5.16
30-YR 8.00 PCT	5.34	5.25	5.19	5.13	5.05

PRØ FØRMA CASH FLØW TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	10 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY :	85.00 PCT(595. SQ FT)		
LØAN RATIO :	75.00 PCT ØF \$ 19500.		
LØAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
VACANCY :	5.00 PCT ØF LEASEABLE		
ØTR INCØME :	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		

ANNUAL CASH FLØWS

LAND LEASE CØST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

RENTAL RATES
ANNUAL \$/SQ FT

\$ 4.80	-267.	-317.	-367.	-417.	-467.
\$ 5.40	72.	22.	-28.	-78.	-128.
\$ 6.00	411.	361.	311.	261.	211.
\$ 6.60	750.	700.	650.	600.	550.
\$ 7.20	1089.	1039.	989.	939.	889.

BREAKEVEN RENTAL RATES

LAND LEASE CØST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

RENTAL RATES
ANNUAL \$/SQ FT

5.27	5.36	5.45	5.54	5.63
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EXHIBIT 6 continued

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	11 OF 12
SITE :	2000. SQUARE FEET	DATE 2-14-1977
BUILDING :	700. SQUARE FEET	BLDG 1
EFFICIENCY:	85.00 PCT(595. SQ FT)	
LOAN RATIO:	75.00 PCT OF \$ 19500.	
LOAN :	\$ 14625.	
EQUITY :	\$ 4875.	
FINANCING :	30. YEARS 9.000 PCT	
REVENUE :	\$ 6.00 PER SQ FT	
VACANCY :	5.00 PCT OF LEASEABLE	
QTR INCOME:	\$ 174. ANNUALLY	RUN 1

ANNUAL CASH FLOWS

LAND LEASE COST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	625.	575.	525.	475.	425.
\$ 2.64	483.	433.	383.	333.	283.
\$ 2.76	411.	361.	311.	261.	211.
\$ 3.00	268.	218.	168.	118.	68.
\$ 3.36	54.	4.	-46.	-96.	-146.

BREAKEVEN RENTAL RATES

LAND LEASE COST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	4.89	4.98	5.07	5.16	5.25
\$ 2.64	5.15	5.23	5.32	5.41	5.50
\$ 2.76	5.27	5.36	5.45	5.54	5.63
\$ 3.00	5.53	5.61	5.70	5.79	5.88
\$ 3.36	5.90	5.99	6.08	6.17	6.26

EXHIBIT 6 continued
PRØ FØRMA CASH FLØW TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	11 OF 12
SITE : 2000. SQUARE FEET	DATE	2-14-1977
BUILDING : 700. SQUARE FEET	BLDG	1
EFFICIENCY: 85.00 PCT(595. SQ FT)		
LØAN RATIO: 75.00 PCT ØF \$ 19500.		
LØAN : \$ 14625.		
EQUITY : \$ 4875.		
FINANCING : 30. YEARS 9.000 PCT		
REVENUE : \$ 6.00 PER SQ FT		
VACANCY : 5.00 PCT ØF LEASEABLE		
ØTR INCØME: \$ 174. ANNUALLY	RUN	1

ANNUAL CASH FLØWS

LAND LEASE CØST

\$ 100.	\$ 150.	\$ 200.	\$ 250.	\$ 300.
-----	-----	-----	-----	-----

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	625.	575.	525.	475.	425.
\$ 2.64	483.	433.	383.	333.	283.
\$ 2.76	411.	361.	311.	261.	211.
\$ 3.00	268.	218.	168.	118.	68.
\$ 3.36	54.	4.	-46.	-96.	-146.

BREAKEVEN RENTAL RATES

LAND LEASE CØST

\$ 100.	\$ 150.	\$ 200.	\$ 250.	\$ 300.
-----	-----	-----	-----	-----

EXPENSE RATES
ANNUAL \$/SQ FT

\$ 2.40	4.89	4.98	5.07	5.16	5.25
\$ 2.64	5.15	5.23	5.32	5.41	5.50
\$ 2.76	5.27	5.36	5.45	5.54	5.63
\$ 3.00	5.53	5.61	5.70	5.79	5.88
\$ 3.36	5.90	5.99	6.08	6.17	6.26

EXHIBIT 6 continued

SENSITIVITY TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS	PAGE	12 OF 12
SITE : 2000. SQUARE FEET	DATE	2-14-1977
BUILDING : 700. SQUARE FEET	BLDG	1
EFFICIENCY: 85.00 PCT OF GROSS		
LOAN RATIO: 75.00 PCT OF \$ 19500.		
EQUITY : \$ 4875.		
FINANCING : 30. YEARS 9.000 PCT		
REVENUE : \$ 6.00 PER SQ FT		
VACANCY : 5.00 PCT OF LEASEABLE		
PARK/OTHER: \$ 174. ANNUALLY	RUN	1
EXPENSES : \$ 2.76 PER SQ FT		
LAND LEASE: \$ 100. ANNUALLY		
CONSTRUCTION AND LAND COST 19500.		

EFFECT OF SELECTED CHANGES IN PARAMETERS
PARAMETER CHANGE INCREASE IN
CASH FLOW

INCREASE BUILDING EFFICIENCY 1 PCT	21.
INCREASE RENTAL RATE \$.10 PER SQ FT	57.
DECREASE VACANCY RATE 1PCT	36.
DECREASE OPERATING RATE \$.10 PER SQ FT	60.
DECREASE PERMANENT RATE .25PCT	31.
DECREASE PERMANENT LOAN TERM BY 1 YEAR	-10.
DECREASE PERMANENT LOAN TERM BY 5 YEARS	-61.
DECREASE THE LOAN RATIO BY 5 PERCENT	94.
DECREASE LAND LEASE BY 10% 100.	

EQUIVALENT EFFECT TO YIELD
A \$ 100. INCREASE IN ANNUAL CASH FLOW

INCREASE BUILDING EFFICIENCY BY	4.86 PCT
INCREASE RENT RATE BY \$	0.18 PER SQ FT
DECREASE VACANCY BY	2.80 PCT
DECREASE EXPENSE RATE BY \$	0.17 PER SQ FT
DECREASE PERMANENT RATE BY	0.79 PCT
INCREASE PERMANENT LOAN TERM BY	8.2 YEARS
DECREASE LOAN RATIO BY	5.3 PERCENT
DECREASE LAND LEASE BY \$	100.

VARIOUS LEASE CLAUSES
AND THEIR IMPORTANCE TO MORTGAGE SECURITY

SCHOOL OF MORTGAGE BANKING

COURSE II. STANFORD UNIVERSITY
August 13-17, 1979

Outline prepared by
Professor James A. Graaskamp
Chairman, Real Estate and Urban Land Economics
University of Wisconsin

I. A Viewpoint for Analysis

- A. Investment in a property for income and appreciation is purchase of a set of assumptions about the future.
 - 1. Each party to the investment attempts to lay off the risk of variance between expectations and realizations on another party by contract.
 - 2. The lease is a critical contract in the web of risk management agreements, because it determines the quality of income which is the source of mortgage loan security.
 - 3. What are the pleasure, pain, and bail-out characteristics of the contract for the landlord? The landlord is lending an asset to the tenant just as the mortgage is a loan of funds to the landlord.
- B. Aside from defining space and price, the lease is primarily concerned with the 'what ifs'.
- C. Since mortgage payments will be made from collected rents, the lender wants to know:
 - 1. Definition of who is the tenant and the landlord and the space to be rented.
 - 2. Under what conditions do the rent payments start?
 - 3. Under what conditions could the tenant legally terminate the lease, i.e. rent payments?
 - 4. What is the rental formula to anticipate changing expenses and utility of the real estate?
 - 5. Can tenants afford the rent?

II. Definitions

- A. Specific space and location to be leased
- B. Specific business entity as lessor
- C. Specific business entity as lessee
- D. Specific description of real estate elements to be leased
- E. Specific exemptions of tenant improvements to remain tenant property

III. Conditions for Commencement of Lease

A. Conditions permitting cancellation by lessor

1. Failure to obtain specified financing prior to construction
2. Death or disability prior to a certain date
3. Impossibility of performance due to acts of God, government regulation, labor conditions, etc.

B. Conditions permitting cancellation by lessee

1. Completion according to specification
2. Completion according to scheduled time
3. Conditions relative to other occupancies

C. Remedies of landlord

1. Forfeiture of tenant deposits or escrow funds
2. Liquidated damage provisions
3. Guarantees by others
4. Penalty rents, assessments, etc.

D. Remedies of tenant

1. Postponement of commencement date
2. Rental abatement
3. Cancellation of lease at option of tenant
4. Penalty payments in contract assessed to the landlord
5. No penalties other than suit for damages

IV. Conditions for Termination of Lease

A. Death or disability at option of lessee estate

B. Scope of "change in conditions" clause

C. Guaranteed occupancy and operations clause

D. Cancellation liquidated damages formula

E. Bankruptcy receivership of business termination clause

F. Assignability clause

G. Implied good faith effort of percentage lease

H. Permitted uses clause

I. Casualty loss event

J. Condemnation events

- K. Specific conditions subsequent explicitly identified as grounds for termination
- L. Subordination position
- V. Rental Formula
 - A. Basic minimum rent
 - B. Formula for rental adjustment over time
 - C. Renewal options, if any, and base rent
 - D. Calculations of prominent areas charges and tenant participation in same
 - E. Real estate tax escalator clause
 - F. Insurance premium stop loss clause
 - G. Utility expense stop loss clause
 - H. General maintenance and replacement assessments for HVAC, parking, lighting, etc.
 - I. Audit of sales and overage rents
 - J. Conditions for rental abatement due to casualty loss, remodeling, road construction, or business interruption due to riot, strike, civil commotion, or disruption of public service.

Critique of A Real Estate Appraisal

- I. Political compromises in the 1930's lead to the appraisal doctrine which defines value and three normative approaches to value based on the economics before income tax. Currently there are strong factors pushing for and against restatement of the appraisal process:
 - A. Normative methods are not predictive of price but nine times out of ten appraisers are supposed to predict the price at which a property would sell under specific circumstances.
 - B. If the appraisal is to serve as a benchmark for a decision under specific circumstances, or purposes, then it should not be governed by conditions characteristic of an efficient market since real estate is not known for market efficiency.
 - C. Widespread acceptance of appraisal models is a function of the cost of reeducation, on the job training, word processing, and data processing and that is being drastically altered by electronics and communication advances.
 - D. A consistent theory for reconstructing appraisal has been prepared by Prof. R.U. Ratcliff but its tenets are being adapted at the grass roots level by individuals rather than considered by the controlling committee of the professional societies.
 - E. Factors which have delayed appraisal reform include:
 1. The uncertainty surrounding efforts to merge the major appraisal societies which at this time are competitive and without control of the profession.
 2. Fear that a retreat from old principles will discredit appraisal designations and existing regulatory monopolies and therefore contribute toward further competitive erosion by the accountants and the engineers and the investment bankers.
 3. Timidity of practicing appraisers to call for a colloquium with which to draft a restatement of appraisal principles and thereby open exhausting and divisive debate.
- II. To critique an appraisal provided as a benchmark of a mortgage loan and to classify the appraiser as contemporary or old guard, the reader should look to the following elements.
 - A. Definition of value - is it the classic definition or defined as the most probable price at which it would sell subject to specific financing terms?
 - B. Does the interest to be appraised represent fee title unencumbered or does it include entitlement to the financing requested or subject to financing appropriate to regulated institutional standard?
 1. Assuming noninstitutional financing distorts financing.
 2. Federal agencies now pursuing fraud cases on letters of valuation without financing conditions.

- C. For a proposed project does the appraisal assume completion and therefore a future appraisal date and does it assume absorption of the units into the market in a stated period of time? If so, it must prove absorption, capture rate and construction as reasonable assumptions or it has sidestepped the critical issue of indirect cost.
1. Home Loan Bank requires market absorption and capture rate studies.
 2. Include total leasing costs.
 3. Compute average occupancy carefully. Filling the building in six months is still 75% occupancy.
- D. Does it discard any of the three approaches at the outset as inappropriate or does it wait until the report reaches the section called synthesis?
1. Cost approach is suspect unless it is a turnkey construction contract.
- E. In using the market approach for an appraisal report indicate buyer motivation on comparable sales or current status of the comparable. Does the appraiser use basic statistics for adjustment or arbitrary percentage or flat dollar shifts in value? Does it provide the standard error of the investment or the mean price?
- F. In doing the income approach does the appraiser use normalized income or cash flows over time and in capitalizing the income does he use market rates, Ellwood rates, or cash on cash mortgage equity? Only the latter is reliable for mortgage loan purposes.
1. Home Loan Bank has outlawed Ellwood approach.
 2. Test net income with debt cover ratio or gross income with default point.
 3. Know cash on cash requirement for your community by property type.
- G. In doing the cost approach, does the appraiser show the entrepreneurial compensation or is that buried in over-estimated construction costs? Hard dollar costs should be the lowest of three estimates, not the highest as advocated by appraisal textbooks. The spread is the developers fee for the entrepreneurial contribution to land, labor and capital.
- H. Does the appraiser provide a test on the after tax basis of either his resale assumptions on which his income approach depends or his conclusion as to most probable price at which it would sell? These tests might include something like BFCF, the resulting financial ratios discussed previously, or a front door approach to demonstrate the rents implied by a given cost of acquisition.
1. Check the statement of limiting conditions to see what applies relative to underlying assumptions and limitations on use.
- J. Check the professional designation. Does it include SREA which is the only designation which requires recertification and a continued learning curve.

OUTLINE OF LECTURE

BASIC PREMISES OF CASH FLOW ANALYSIS APPLIED TO INCOME PROPERTY LOANS

James A. Graaskamp
Associate Professor of Business
Graduate School of Business
The University of Wisconsin
Madison, Wisconsin

School of Mortgage Banking Course III--(10:15-11:45)

I. Basic Real Estate Attributes and Definitions

- A. Definition of real estate--a space-time interface of land (public resource), people (cultural preference) and artifacts (improvements).
- B. Definition of real estate business and investment--a service industry which converts space-time needs of people to money-time by using heavy capital investment in manufactured products called improvements.
- C. The real estate process is the interactive decision making of the consumer, the producer, and the society in such a way that at the very least all remain solvent and all gain some additional satisfaction for their effort. The planner is an arbitrator among these three decision makers.
- D. Some implications of these definitions of the real estate process:
 1. Land is an exhaustible resource and therefore a public utility.
 2. The space-time service product is the social terrarium of the society and therefore must respond to society's needs and priorities as well as the individual consumer.
 3. Private property is the residual after subtracting public rights in the land and its use.
 4. Eventually cash money and not real estate will be the measure of private property.
 5. In a service industry there is no ownership of a product--only control of a customer.
 6. 20th century real estate equity is the degree to which one controls disbursements of a captive customer.
- E. Feasibility is a nonfinancial concept of matching artifact and service to a context of public priorities and customer needs.
- F. Real Estate investment is "buying" a set of financial assumptions derivative of a feasible solution.
- G. Return or yield on investment is simply a ratio of outlays to receipts which recognizes the time value or opportunity cost of money.

- H. Risk is the variance between assumptions taken and realizations achieved, between proforma estimates and P and L realized.
- II. A mortgage is a real estate investment decision. It requires a set of assumptions relative to an investment strategy, an expected rate of return, and the risk incurred should the assumptions fail to be realized.
- A. The assumptions of the mortgage loan contain some very basic paradoxes and conflicts in the assumptions of lender and borrower.
 - 1. The investor-lender wants:
 - a. Yield
 - b. Safety
 - c. Planned liquidity
 - d. To trade money for talent or services
 - 2. The borrower seeks mortgage credit to:
 - a. Shift the risk of real estate
 - b. Pay less for money than it will earn
 - c. Control profit centers with priority in mortgage value due to inflation while trading intangible talent for tangible cash money.
 - B. The mortgage investment strategy seeks to synthesize those positions through a simple hierarchy of motivations and alternatives.
 - 1. Pleasure--a vested interest and continued cash profits for the borrower
 - 2. Pain--a latent threat of painful cash losses for the borrower
 - 3. Bail-out--the option of cash salvage of the investment by the lender
 - C. Pleasure for the borrower in the form of cash may be found in:
 - 1. Profit centers in related service and supply enterprises
 - 2. Cash throw-off after debt service
 - 3. Equity buildup and capital gain
 - 4. Cash surplus from refinancing
 - 5. Tax savings to other income
 - 6. Pride of ownership and accomplishment
 - D. Pain for the borrower
 - 1. Specific performance and loss of other assets
 - 2. Damages for breach of contract
 - 3. Loss of profit centers and other cash benefits
 - 4. Loss of cash equity investment
 - 5. Loss of time investment
 - 6. Loss of face
 - E. Bail-out of a bad loan depends on
 - 1. Foreclosure and resale
 - 2. Indemnification by mortgage loan guarantor or endorser

- F. Appraisal of income properties has conditioned the industry to think of the net income figure and the overall investment as fixed numbers--as conditions of certainty.
 - 1. The fallacy of loan ratios as a replacement for capacity for cash variance
 - 2. The fallacy of appraisal economic net versus cash flow or cash throw-off
 - 3. The fallacy of equity and the loan ratio

- G. To talk about risk and compare investment on the basis of risk implies some explicit measure rather than subjective doubt.
 - 1. A mortgage closing is a risk management process concerned with bail-out.
 - 2. Mortgage underwriting is a risk management process concerned with controlling the variance in assumptions about the pleasure and pain potentials of the deal.
 - 3. Variance may be binary--yes no questions--you will or you won't receive zoning approval.
 - 4. Variance may be the range of alternative outcome around an average or median--of cost, of revenue, of expense, or of vacancy.
 - 5. The underwriter wants to examine methodically the possibilities for variance and the best controls which would limit variance within the capacity to survive and make payments on the loan.

- II. The risk management process is both a philosophy of inquiry and a systematic management process for any enterprise. Risk management has two objectives:
 - 1. Conservation of existing enterprise assets despite surprise events.
 - 2. Realization or budgeted expectations despite surprise events.

- I. The process of risk management involves systematic and continuous:
 - 1. Identification of significant exposures to loss
 - 2. Estimation of potential loss frequency and severity
 - 3. Identification of alternative methods to avoid loss
 - 4. Selection of a risk management method
 - 5. Monitoring execution of risk management plan

- J. For ease of analysis there are two kinds of risks:
 - 1. Dynamic risks can produce profit or loss and are best controlled by the finesse of management execution of a plan.
 - 2. Static risks are those which can only cause a loss due to surprise upset of a plan.

- K. Many of the things which you do are risk management procedures:
 - 1. Priority of personal insurance
 - 2. Requirements to close a home loan
 - 3. Provisions in a lease that anticipate "what if" questions

- L. Alternative tools of risk management include:
 - 1. Eliminate risk exposure
 - 2. Reduce frequency or severity of loss (mortgage loan closing process)
 - 3. Combine risks to increase predictability (reserves for expenses)
 - 4. Shift risk by contract (subcontracts or escape clauses)
 - 5. Shift risk by combination by contract (insurance)
 - 6. Limit maximum loss (corporate shell or limited partnership)
 - 7. Hedging (sale and lease-back, options, contingent sales)
 - 8. Performance incentives

- III. To determine yield, the relationship of outlays and receipts over time, one must first identify the elements of financial assumption which go into a financial plan, and the decision which needs to be made on the basis of yield.
 - A. Feasibility of the development requires development of context to which development plans must be fitted.
 - 1. Development strategy
 - 2. Market opportunity area
 - 3. Merchandizing target within market opportunity
 - 4. Legal-political constraints
 - 5. Impact-ethical constraints
 - 6. Physical-technical constraints
 - 7. Financial constraints

 - B. The mortgage lender on an income property has a variety of decisions to make in terms of borrower motivation, the value of pain incentives, and the probabilities of success and the alternatives in the event of failure.

 - C. Complex decisions must be simplified and systematized, particularly in your business where you must make the same types of decisions over and over again. Models permit systematic decision making and the choice of model depends on:

1. What decision needs to be made?
 2. What data is available to make it?
 3. That theories are available to relate the data to the problem?
 4. What are the limitations of the decision maker?
 5. What are the limitations of the client in terms of communication of a decision?
 6. What is the cost-benefit ratio of the method and the results?
- D. The financial assumptions which must be considered by a model to determine yield are:
1. The profit center viewpoint
 2. The time-line of financial events
 3. The capital budget
 4. The revenue and expense pattern
 5. The financing structure
 6. The income tax structure
 7. The defined indices of risk
 8. The selected measure of yield

CASH FLOW ANALYSIS OF AN APARTMENT HOUSE INVESTMENT

School of Mortgage Banking Course III--(1:00-3:00)

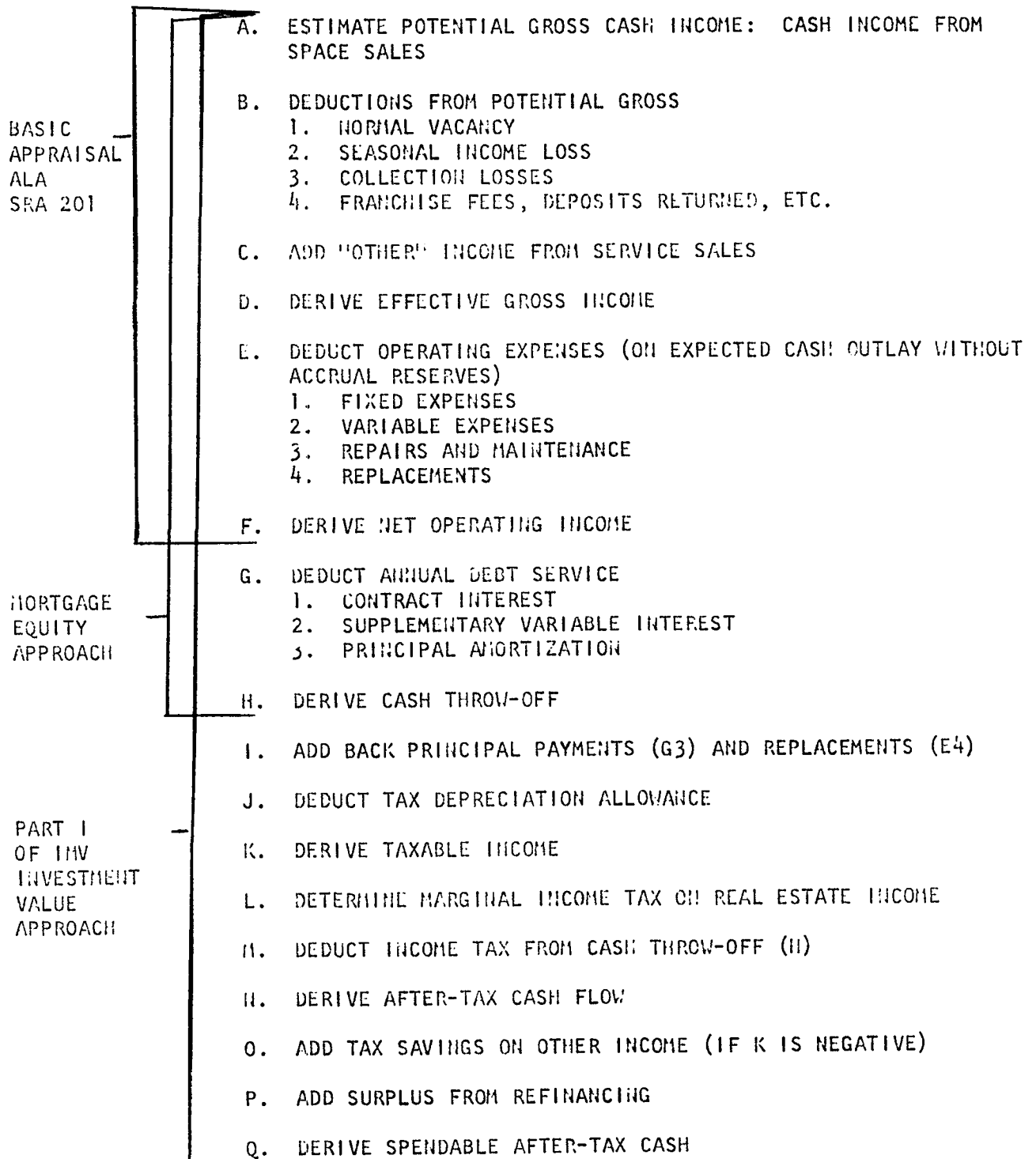
- I. To understand the pleasure, pain, and bail out cash characteristics of an income property, it is necessary to project cash flows over a five or ten year period by making explicit assumptions about outlays and receipts. These assumptions can then be checked to see if they are realistic and tested for the significance to the investment if they should change in order to identify priority of importance for risk management.
 - A. First we will establish a demonstration case - a 24-unit apartment
 1. Assumptions
 2. The mini-mod - basic to a college level principles of real estate course
 3. A variety of ratios and deals which may apply to an investment decision
 - B. For the second session this afternoon we will look more closely at theories of yield, sensitivity studies, and risk.
 - C. Cash flow is not ivory tower - it's becoming the rule now!
 1. Insurance companies are processing your loan application with cash flow models and can negotiate joint ventures with a portable terminal in a motel room.
 2. Those developers who negotiate directly with lenders provide such cash flow projections.
 3. All consulting firms use them to advise their clients
 4. All mortgage bankers will be required to present cash flow projections in the near future. Even the SEC will require such for a limited partnership prospectus.
 5. Dozens of commercial models are available throughout the country from organizations such as:
 - a. EDUCARE
 - b. GE Time Sharing
 - c. Omnimetrics - Los Angeles
 - d. Realmetrics - San Francisco
 - e. TAP - GE Time Sharing
- II. At the very basic level, there are only two kinds of returns to an investor of mortgage or equity funds - periodic returns each month or year and a lump sum reversion from maturing of the loan or sale of the property.
 - A. Allowing for present value discounting, the total investment value of an income property is the sum of:

Present value of payments to the mortgage lender (discounted at mortgage rate)
+
Present value of spendable cash each year to equity investors (discounted at equity rate)
+
Present value of net proceeds on resale (discounted at equity discount rate)

- B. The appraiser assumes a before tax viewpoint for his present value model. For value to equal $1/OAR$ it is necessary to assume that net operating income is level, investment is instant, and that all dollars are alike, not to mention that the only profit center occurs below the line of expenses.
- C. However, the income tax treats different sources of dollars in different ways:
 - 1. Operating profits are taxed at income tax rates but may have depreciation shelter
 - 2. Capital gains are taxed at less than the income tax rate
 - 3. Surplus from refinancing is not taxed
 - 4. Tax savings to other income as a result of paper real estate losses creates spendable cash
- D. Therefore it is useful to thoroughly classify annual returns and resale returns to the investor for systematic prediction of cash benefits to the investor.
 - 1. To determine motivation of borrower
 - 2. To identify risk characteristics of the investment
 - 3. To force explicit assumptions about the conventional wisdoms of real estate
- E. Systematic classification of annual returns to investor

SYSTEMATIC CLASSIFICATION OF ANNUAL CASH REVENUE & OUTLAYS
FOR A RENTAL INCOME PROPERTY

PART I. ANNUAL RETURNS TO INVESTOR



PART II. RESALE RETURNS TO INVESTOR

- A. ESTIMATED RESALE PRICE
- B. DEDUCT BROKER'S COMMISSION AND OTHER TRANSACTION COSTS
- C. DERIVE EFFECTIVE GROSS PROCEEDS FROM SALE
- D. DEDUCT ALL CREDIT CLAIMS (EOY) OUTSTANDING
 - 1. SHORT AND LONG TERM NOTE BALANCES DUE
 - 2. PREPAYMENT PENALTIES
 - 3. DEDUCT EQUITY SHARES TO NON-OWNER INTEREST
- E. DERIVE PRE-TAX REVERSION TO EQUITY
- F. DEDUCT TAX CLAIMS ON OWNERSHIP INTEREST
 - 1. DEDUCT CAPITAL GAINS TAX
 - 2. DEDUCT INCOME TAX ON DISALLOWED ACCELERATED DEPRECIATION
 - 3. DEDUCT SURTAX ON TAXABLE PREFERENTIAL INCOME
- G. DERIVE AFTER-TAX RESALE PROCEEDS TO INVESTOR

UNIVERSITY OF WISCONSIN
Real Estate Investment Teaching Model
Demonstration Case Study #2

ANALYSIS FOR PURCHASE OF APARTMENT HOUSE INVESTMENT

1. Assume you wish to analyze the investment value at alternative purchase prices of a 24 unit apartment building, located at 2575 University Avenue, Madison, Wisconsin. The building has twelve two-bedroom apartments that each rent furnished for \$140 per month and twelve one-bedroom apartments that rent each for \$125 per month. The building is five years old, unfurnished, in need of maintenance and available as is for about \$225,000.
2. The building is well located and vacant land in the area is selling for about \$1700 per unit. This means that \$40,000 of the purchase price could be designated as land value. In addition to the land and building, the purchase price could be allocated to include \$12,500 for the elevator and \$7,200 to the parking stalls.
3. Market analysis indicates that the building would rent very well if all the units were carpeted and furnished. For this work it is estimated that it would cost \$600 per two-bedroom unit and \$500 for each one-bedroom unit or a total investment of \$13,200 by the prospective buyer.
4. The total capital expenditures could be allocated for depreciation purposes as follows, keeping in mind that the prospect would be a second user and therefore only entitled to a maximum of 125% declining balance except for his new investment in furnishing. The percent depreciable and the number of years of remaining useful life are reasonable estimates given some knowledge of the practices of the Internal Revenue Service and the condition of the building:

Land	\$40,000	No depreciation allowed		
Parking	7,200	50%	10 yrs.	125%
Elevator	12,500	90%	12 yrs.	125%
Building	165,300	100%	35 yrs.	125%
Furnishings	13,200	100%	7 yrs.	sum of digits
Transaction costs	1,800	100%	35 yrs.	125%

5. After completion of repairs and refurbishing it is anticipated that the two-bedroom apartments will rent for \$170 a month and the one-bedrooms \$150 per month. The gross rent roll of the building would then be:

$$\$170 \times 12 \times 12 = 24,480$$

$$\begin{aligned} \$150 \times 12 \times 12 &= 21,600 \\ &\$ \underline{46,080} \end{aligned}$$

6. During the first year of changeover in ownership, refurbishing and re-leasing you estimate that each unit will be vacant about two months, that is about one-sixth of the time, (i.e. a vacancy of 17%) so that your average occupancy will

APARTMENT CASE STUDY #2

be 83% of potential for the first year. Thereafter you anticipate a normal vacancy rate of 5%, or an occupancy of 95%. Thus first year extra expenses include an additional 12% of future gross for rental losses.

7. The current real estate and personal property taxes to be paid in the first year following purchase are estimated to be \$9,000. The normal current operating expenses, excluding real estate taxes but including management fees, are determined to be \$8,400.
8. The property has been poorly maintained and will require additional expenditures of \$2100 in the first year to justify the new rent schedule. This deferred maintenance charge will be added to the extra operating expenses of the first year washing it out as a tax deductible expense.
9. The buyer is considering this property because his accountant suggested that with his 30% tax bracket, including state and federal taxes, he should look for some tax shelter to offset some of his other current income. Using the accelerated method of depreciation, this real estate project should satisfy this requirement.
10. The investor feels that while the normal ratio of market value to income in his community ranges between 8% and 11%, proper financing should raise the pre-tax yield on his cash equity to at least 18%. The accountant suggests that if the investor considers the cash saved on deferred income taxes due to depreciation, the investor should seek at least 18% to 22% on his investment annually on an after-tax basis. His opportunity cost is 12% as that is his common stock return including capital gains.
11. The financing available to the investor would initially combine the assumption of a first mortgage with a balance of \$180,000 with 240 months to run and a second mortgage taken back by the seller to be repaid in ten years, in monthly payments. The investor would plan to refinance both loans at the end of the sixth year of ownership when the prepayment penalty would lapse on the first mortgage. The seller feels he should receive \$1000 as points on the second mortgage since that is the discount he will take when he sells the note.

1st Mortgage	180,000	20 year	7 3/4%	
		5 year balloon		
Private loan	15,000	10 year	8 1/2%	\$1000 discount
		5 year balloon		

12. While the seller will pay for title insurance, a survey, and related items the buyer expects to pay about \$800 in professional appraisal and legal fees related to this transaction. These fees plus points in #11 equal transaction costs of \$1800 which increase original cash required and must be amortized over life of structure.
13. Temporary cash deficits at the end of any month can be covered with bank notes at a rate of 9% per annum and repaid out of positive cash flows when available.

APARTMENT CASE STUDY #2

14. The financial plan is to maintain a highly leveraged position and therefore payoff the original loans at the end of the fifth year by obtaining a new mortgage. To discover some measure of influence of such refinancing on yield to equity and cash flows, the investor will assume that in five years the best loan he could obtain would equal \$190,000 for 20 year term at 8% interest. The age of the building at that time would require granting a bonus interest feature equal to 4% of gross rent as of the beginning of sixth year when the loan begins.



February, 1971

Card Type 5

						Gross Rent	Expenses	Rental Growth Rate	Expense Growth Rate																																																							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
																						4	6	0	8	0	8	4	0	0	.	0	2	0	0	.	0	2	0	0																								

Card Type 6

						R E Taxes	R E Tax Growth Rate	Project Value Rate of Growth																																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
																						9	0	0	0	.	0	5	0	0	.	0	1	0	0																													

Card Type 7

						Vacancy Rate	Working Capital Loan Interest Rate																																																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
																						.	0	5	0	0	.	0	9	0	0																																	

To code Depreciation Method, use the following code no's.

- 0 = no depreciation
- 1 = sum of the digits
- 2 = straight line depreciation
- 3 = 125% declining balance
- 4 = 150% declining balance
- 5 = 200% declining balance

HAVE YOU CHECKED CARD 1 COLS. 61 and 64?

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COMPONENTS	PCT. DEPR	BEGIN USE	USEFUL LIFE	DEPR MFTHDD	COST	GROSS RENT	EXPENSES	R E TAXES	INCOME TAX RATE	VACANCY RATE	EQUITY DISCOUNT RATE	STAGING YR(0), FACTOR	RATE OF GROWTH OF GROSS RENT	RATE OF GROWTH OF EXPENSES	RATE OF GROWTH OF R E TAXES	RATE OF GROWTH OF PROJECT VALUE	WORKING CAPITAL LOAN RATE	EXTRAORDINARY EXPENSES	COST OF EQUITY CAPITAL
LAND	.00	1	.	0	\$ 40000.	\$ 46080.	\$ 8400.	\$ 9000.	.3000	.0500	.1800	.00	.0200	.0200	.0500	.0100	.0900	\$ 7625.	.1200
BUILDING	1.00	1	35.	3	\$ 165300.														
PARKING	.50	1	10.	3	\$ 7200.														
FURNISHINGS	1.00	1	7.	1	\$ 13200.														
ELEVATOR	.80	1	12.	3	\$ 12500.														
TRANSACTION COST	1.00	1	35.	3	\$ 1800.														
7TH YR REFURBISH	1.00	8	7.	1	\$ 10000.														
TOTAL INITIAL INVESTMENT					\$ 240000.														

	1	2	3	4	5	6	7	8	9	10
CASH EQUITY REQUIRED	45000.	45000.	45000.	45000.	45000.	50000.	50000.	50000.	50000.	50000.

FINANCING PLAN

FIRST ASSUMED MORTG. \$ 180000.
MONTHLY PAYMENT \$ 1477. INTEREST RATE .0775 STARTS 1 ENDS 5 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	3919.	4234.	4574.	4942.	5339.	.	.	.	.	.
INTEREST	13812.	13497.	13157.	12790.	12393.	.	.	.	.	.
BALANCE	176080.	171845.	167270.	162328.	156989.	.	.	.	.	.

SELLERS 2ND MORTG \$ 15000.
MONTHLY PAYMENT \$ 185. INTEREST RATE .0850 STARTS 1 ENDS 5 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	994.	1082.	1178.	1282.	1396.	.	.	.	.	.
INTEREST	1236.	1148.	1053.	948.	835.	.	.	.	.	.
BALANCE	14005.	12922.	11743.	10460.	9064.	.	.	.	.	.

REFINANCED FIRST \$ 190000.
MONTHLY PAYMENT \$ 1589. INTEREST RATE .0800 STARTS 6 ENDS 10 BONUS INTEREST .0400 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	4016.	4349.	4710.	5101.	5524.
INTEREST	15054.	14721.	14360.	13969.	13546.
BALANCE	185983.	181634.	176924.	171822.	166297.

REFURBISH CHATTEL \$ 10000.
MONTHLY PAYMENT \$ 150. INTEREST RATE .0900 STARTS 8 ENDS 10 BONUS INTEREST .0000 OF GROSS RENT

	1	2	3	4	5	6	7	8	9	10
PRINCIPAL	938.	1026.	1122.
INTEREST	861.	773.	677.
BALANCE	9061.	8035.	6913.

-15-

	1	2	3	4	5	6	7	8	9	10
GROSS RENT	46080.	47001.	47923.	48844.	49766.	50688.	51609.	52531.	53452.	54374.
LESS VACANCY ALLOWANCE	2304.	2350.	2396.	2442.	2488.	2534.	2580.	2626.	2672.	2718.
EFFECTIVE GROSS INCOME	43776.	44651.	45527.	46402.	47278.	48153.	49029.	49904.	50780.	51655.
LESS REAL ESTATE TAXES	9000.	9450.	9900.	10350.	10800.	11250.	11700.	12150.	12600.	13050.
LESS EXPENSES	16025.	8568.	8736.	8904.	9072.	9240.	9408.	9576.	9744.	9912.
NET INCOME	18751.	26633.	26891.	27148.	27406.	27663.	27921.	28178.	28436.	28693.
LESS DEPRECIATION	11469.	10537.	9640.	8775.	7940.	6762.	5942.	7729.	7144.	6571.
LESS INTEREST	15049.	14646.	14210.	13739.	13229.	17082.	16785.	17323.	16881.	16398.
TAXABLE INCOME	-7768.	1449.	3039.	4633.	6236.	3818.	5192.	3125.	4410.	5723.
PLUS DEPRECIATION	11469.	10537.	9640.	8775.	7940.	6762.	5942.	7729.	7144.	6571.
LESS PRINCIPAL PAYMENTS	4914.	5317.	5753.	6224.	6735.	4016.	4349.	5648.	6127.	6647.
CASH THROW-OFF	-1213.	6669.	6926.	7184.	7441.	30510.	6785.	15206.	5427.	5647.
LESS TAXES	.	434.	911.	1390.	1870.	1145.	1557.	937.	1323.	1716.
CASH FROM OPERATIONS	-1213.	6234.	6014.	5794.	5570.	29365.	5227.	14268.	4104.	3930.
WORKING CAPITAL LOAN(CUM BALANCE)	1213.	.	.	.	.	.	.	.	.	.
SPENDABLE CASH AFTER TAXES	.	4911.	6014.	5794.	5570.	29365.	5227.	4268.	4104.	3930.
TAX SAVINGS ON OTHER INCOME	2330.	.	.	.	.	.	.	.	.	.
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
MARKET VALUE	242400.	244800.	247200.	249600.	252000.	254400.	256800.	269200.	271600.	274000.
BALANCE OF LOANS	191298.	184767.	179014.	172789.	166054.	185983.	181634.	185985.	179858.	173211.
NET WORTH OF PROPERTY	51101.	60032.	68185.	76810.	85945.	68416.	75165.	83214.	91741.	100788.
CAPITAL GAIN	10253.	20506.	30759.	41013.	51266.	61519.	71773.	83455.	95329.	106757.
CAPITAL GAINS TAX	1537.	3075.	4613.	6151.	7689.	9227.	10765.	12518.	14299.	16013.
INCOME TAX ON EXCESS DEPRECIATION	1084.	1890.	2426.	2702.	2729.	2401.	1828.	1362.	663.	.
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
PERCENT INITIAL EQUITY PAYBACK AFTER TAX	.0517	.1609	.2946	.4233	.5471	1.0797	1.1843	1.2696	1.3517	1.4303
NET INCOME-MARKET VALUE RATIO	.0773	.1087	.1087	.1087	.1087	.1087	.1087	.1046	.1046	.1047
RETURN ON NET WORTH BEFORE TAXES	.1086	.3052	.2511	.2318	.2158	.1510	.1978	.3093	.1676	.1601
RETURN ON NET WORTH AFTER TAXES	.1290	.2372	.2196	.2061	.1933	.1406	.1939	.1762	.1665	.1553
CASH RETURN ON ORIG CASH EQUITY BEF TAX	-.0269	.1482	.1539	.1596	.1653	.6102	.1357	.3041	.1085	.1129
CASH RETURN ON ORIG CASH EQUITY AFT TAX	.0517	.1091	.1336	.1287	.1237	.5873	.1045	.0853	.0820	.0786
DEFAULT RATIO	.9763	.8339	.8054	.8029	.8004	.8204	.8185	.8508	.8484	.8461
LENDER BONUS INTEREST RATE	.0000	.0000	.0000	.0000	.0000	.0122	.0110	.0115	.0114	.0120
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
PRESENT VALUE OF PROJECT BEFORE TAXES	238306.	242903.	245505.	247329.	248531.	247609.	247992.	255579.	255349.	255001.
PRESENT VALUE OF PROJECT AFTER TAXES	238058.	240050.	241378.	242202.	242600.	241500.	241748.	246686.	246477.	246115.
EQUITY W/ COST OF CAPITAL AT .120	.1290	.1793	.1862	.1889	.1862	.1775	.1742	.1706	.1639	.1639

UNIVERSITY OF WISCONSIN SCHOOL OF BUSINESS
Real Estate Investment Teaching Model
February, 1971
Basic Definitions of Model Outputs

- 1) Current period return on Net Worth before taxes =

$$\frac{\text{Cash Throw-off} + \text{Change in Net Worth}}{\text{Net Worth at End of Previous Year}}$$

- 2) Current period return on net worth after taxes =

$$\frac{\text{Spendable cash} + \text{tax savings on other income} + \text{(Change in net worth - change in cap. gains tax)}}{\text{Net worth at the end of previous year less capital gains tax of previous year}}$$

- 3) Cash return on original cash equity before taxes =

$$\frac{\text{Cash throw-off}}{\text{Total initial investment less initial mortgage debt}} \\ \text{(This is adjusted for staged projects)}$$

- 4) Cash return on original equity cash after taxes =
(This is adjusted for staged projects)

$$\frac{\text{Spendable Cash after taxes} + \text{Tax savings on other income}}{\text{Total initial investment cost less initial mtge. debt}}$$

- 5) Net income - market value ratio

$$\frac{\text{Net Income}}{\text{Market Value for the same period}}$$

- 6) After tax cash recovered - cash equity ratio (payback) =

$$\frac{\text{Accumulated spendable cash after taxes} + \text{accumulated tax savings}}{\text{Cash equity required}} \\ \text{other income}$$

- 7) Default ratio =

$$\frac{\text{Operating Exp.} + \text{R.E. Taxes} + \text{Prin. \& Interest on Mtge.} + \text{Working Cap. Loan Prin. Repayment}}{\text{Gross Income}}$$

8) Lender Bonus Interest Rate =

$$\frac{\% \text{ of effective gross (not to exceed cash throw-off for period)}}{\text{Balance due on loan at beginning of period}}$$

9) Resale Market Value at End of Year

$$\text{Total Initial Investment Cost} + \frac{\text{Additional Staged Investment X}}{\text{Index for Year}}$$

10) Net worth of property =

$$\text{Market value less balance of loans less working capital loans}$$

11) A. Sales proceeds subject to capital gains tax =

$$\text{Market value} - (\text{Total Capital Investment} - \text{Straight-line depreciation} - \text{Allowed excess depreciation})$$

B. Sales proceeds subject to income tax =

$$\text{Cumulative depreciation taken} - \text{Straight-line depreciation} - \text{Allowed excess depreciation}$$

$$\text{C. Taxes on sale} = (\text{A} \times 1/2 \text{ Income Tax rate}^*) + (\text{B} \times \text{Income Tax Rate})$$

* Not to exceed 25%

12) Present value of project before taxes =

$$\text{Original mortgage balance} + \text{PV of received stream of cash throw-off} + \text{PV of net worth if sold at end of year indicated by column number.}$$

13) Present value of project after taxes =

$$\text{Original mortgage balance} + \text{present value of received stream of spendable cash after taxes} + \text{PV of received tax savings on other income} + \text{PV of (net worth less capital gains tax) if sold at end of year indicated by column number.}$$

14) Cash Equity Required = \sum \$ components utilized -

$$\sum \text{face value of mortgages in force}$$

15) For each year N (net worth - cap gains tax) +

$$X = \sum_{N=1}^N [(\text{Spendable Cash Aft Taxes} + \text{Tax Savings}) * (1. + \text{Cost of Equity Cap})^{N-1}]$$

$$Y = (\text{LOG}(X) - \text{LOG}(\text{Original Investment}))/N$$

$$\text{Equity Rate} = \text{Exp}(Y) - 1.$$

CASH FLOW ANALYSIS OF AN APARTMENT HOUSE INVESTMENT

School of Mortgage Banking Course 111--(3:00-5:30)

- I. The computer printout provides more numbers than the analyst knows what to do with. It removes all time and cost constraints to the computation of desired budget ratios or decision benchmarks. To take advantage of this potential it is necessary to remember that real estate investment is a capital budgeting decision, like any other. Thus it is useful to review capital budgeting techniques and theory.
 - A. What is needed is financial models for making a variety of investment decisions, such as accept or reject a loan application, selecting the best combination of physical or financial features, or ranking of alternative courses of action.
 - B. Investment money managers distinguish between a conventional investment and a non-conventional investment by the pattern of outlays and receipts. Investment theory presumes outlays occur at the beginning of a period and proceeds are earned at the end of each period. A period is generally one year but might be a quarter or a month.
 1. A conventional investment has one or more periods of outlays followed by one or more periods of positive cash proceeds. Negative cash proceeds (losses) are treated as outlays.
 2. A non-conventional investment has one or more periods of outlays interspersed with periods of positive cash flows.
 - C. Assuming risk to be equal, investment decisions attempt to provide a standard for choosing between alternative investment (courses of action) based on yield.
 1. For an investor with relatively unlimited funds and opportunities, such as an insurance company, the problem is to make accept or reject decisions for many independent investments, generally accepting each if yield is greater than some minimum acceptable rate of discount.
 - a. Substitution theory and the cost of money
 - b. Ellwood theory began as device to screen loan submissions
 2. Some investors have only enough money for a single site with which to make one investment and they are interested in shaping that investment to make the best profit possible within an acceptable limit of risk.
 - a. Alternative plant locations
 - b. Engineering design choices
 - c. Yield methods may give less accurate rankings for mutually exclusive decisions because they reflect average rather than incremental cash flows.
 - d. Mutually exclusive investments often involve marginal revenue versus marginal investment issues.

- D. Your appraisal training has already given you some introduction to the problem of defining what is profit and what is recapture of capital and therefore ranking of investments.
1. Straight line allocates earnings without recognition of a reinvestment rate and produces the lowest value.
 2. Hoskold uses a sinking fund factor to recognize reinvestment at a safe rate and therefore releases more proceeds to income and produces a higher value than straight line approach.
 3. Inwood defines reinvestment to be the same as a discount rate, therefore requiring smaller sinking fund amounts and releasing more to income thereby generating the highest value for the investment.
- E. The ranking of alternative investments depends on a definition of yield and works best for pairs of alternatives and disintegrates as the number of alternatives increases. It will be shown by the end of the morning that an investment will be judged by a combination of yield factors in order to correctly define the investment from the standpoint of risk, the cost of money plans for use of the profits, and the viewpoint of the investor. Consider the following alternative measures of yield relative to four investments.

<u>Investment</u>	<u>Initial Cost</u>	<u>Net Cash Proceeds Per Year</u>	
		<u>Year 1</u>	<u>Year 2</u>
A	\$10,000	\$10,000	
B	10,000	10,000	\$1,100
C	10,000	3,762	7,762
D	10,000	5,762	5,762

THE PAYBACK PERIOD

<u>Investment</u>	<u>Payback Period (years)</u>	<u>Ranking</u>
A	1	1
B	1	1
C	1.8	4
D	1.7	3

AVERAGE INCOME ON BOOK VALUE

<u>Investment</u>	<u>Average Proceeds</u>	<u>Average Depreciation*</u>	<u>Average Income (Proceeds less Depreciation)</u>	<u>Average Book[†] Value</u>	<u>Income on Book Value,%</u>	<u>Ranking</u>
A	\$10,000	\$10,000	\$ 0	\$5,000	0	4
B	5,550	5,000	550	5,000	11	3
C	5,762	5,000	762	5,000	15	1
D	5,762	5,000	762	5,000	15	1

* Assuming straight line depreciation, † investment divided by two.

AVERAGE INCOME ON COST

<u>Investment</u>	<u>Cost</u>	<u>Average Income</u>	<u>Ave. Income on Cost,%</u>	<u>Ranking</u>
A	\$10,000	\$ 0	0	4
B	10,000	550	5.5	3
C	10,000	762	7.6	1
C	10,000	762	7.6	1

PRESENT VALUE OF THE INVESTMENT Rate of Interest: 30%

<u>Investment</u>	<u>Present Value of Proceeds</u>	<u>Present Value of Outlay</u>	<u>Net Present Value</u>	<u>Ranking</u>
A	\$ 9,450	\$10,000	\$ -570	4
B	10,413	10,000	+413	3
C	10,457	10,000	+457	2
D	10,564	10,000	+564	1

PRESENT VALUE OF THE INVESTMENT Rate of Interest: 30%

<u>Investment</u>	<u>Present Value of Proceeds</u>	<u>Present Value of Outlay</u>	<u>Net Present Value</u>	<u>Ranking</u>
A	\$7,692	\$10,000	\$ -2,308	3
B	8,343	10,000	-1,657	1
C	7,487	10,000	-2,513	4
D	7,842	10,000	-2,158	2

SUMMARY OF RANKING

<u>Measure of Investment Worth</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Payback Period	1*	1*	4	3
Average Income on Book Value or Cost	4	3	1*	1*
Present Value: at 6%	4	3	2	1
at 30%	3	1	4	2

* Indicates tie between two investments

INCREMENTAL BENEFITS

<u>Investment</u>	<u>Year</u>	<u>Cash Flows</u>		<u>Yield, %</u>	<u>Net Present Value at 5%</u>
		<u>Outlays</u>	<u>Proceeds</u>		
Y	0	\$100.00		20	\$27.89
	1		\$20.00		
	2		120.00		
	0	100.00		25	23.58
	1		100.00		
	2		31.25		

<u>Investment</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>Present-Value Index</u>
X	\$ -1,500	\$1,000	\$1,000	1.16
Y	-3,100	2,000	2,000	1.12

<u>Investment</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>Present-Value Index</u>
Y - X	\$ -1,600	\$1,000	\$1,000	1.08

F. The real estate appraiser is generally familiar with investment decisions using a net present value method for decision making. Note that this method requires assuming a discount rate (9% in example below) and a stream of benefits and the object is to compute the maximum justified investment. Example:

An Income Property Costing \$50,000 (PVO) Will Have the Following Cash Flows:

Year 1	\$2,000 Income
Year 2	5,000 Income
Year 3	5,100 Income
Year 4	5,200 Income
Year 5	55,000 Income and Reversion

At 9% What is the Net Present Value (NPV) of the Property?

	<u>Amount</u>	<u>P.V. Factor at 9%</u>	<u>P.V. Benefits (PVB)</u>
Year 1	2,000	.9174	\$ 1,834
Year 2	5,000	.8417	4,209
Year 3	5,100	.7722	3,938
Year 4	5,200	.7084	3,684
Year 5	55,000	.6499	<u>35,745</u>
			\$49,410

PVB - PVO = NPV

\$49,410 - \$50,000 = -\$590

CONCLUSION: Do Not Buy the Project

G. Many corporations wish to solve for yield when they know the outlay and they know the stream of benefits. The measure of yield which they use is the internal rate of return (IRR). The internal rate is that rate which makes net present value (NPV) equal to 0 or PVB equal to PVO. For example:

An Income Property Costing \$20,000 Will Have the Following Cash Flows:

Year 1	2,000	Income
Year 2	3,000	Income
Year 3	3,000	Income
Year 4	3,500	Income
Year 5	20,000	Income and Reversion

Net Present Value at 11%

	<u>Amount</u>	<u>P.V. Factor at 12%</u>	<u>P.V. Benefits (PVB)</u>
Year 1	2,000	.8929	1,785.80
Year 2	3,000	.7972	2,391.60
Year 3	3,000	.7118	2,135.40
Year 4	3,500	.6355	2,224.25
Year 5	20,000	.5674	<u>11,348.00</u>
			19,885.05

PVB - PVC = NPV

\$19,885.05 - 20,000 = 114.95

Net Present Value at 11.8375017151%

	<u>Amount</u>	<u>P.V. Factor at 11.8375017151%</u>	<u>P.V. Benefits (PUB)</u>
Year 1	2,000	.89415445	1788.3089
Year 2	3,000	.79951218	2398.5365
Year 3	3,000	.71488738	2144.6621
Year 4	3,500	.63921973	2237.2691
Year 5	20,000	.57156117	<u>11431.2234</u>
			20,000.0000

PVB - PVC = NPV

20,000 - 20,000 = 0

Internal Rate of Return (IRR): That Rate Which Makes NPV = 0
or PVB - PVC

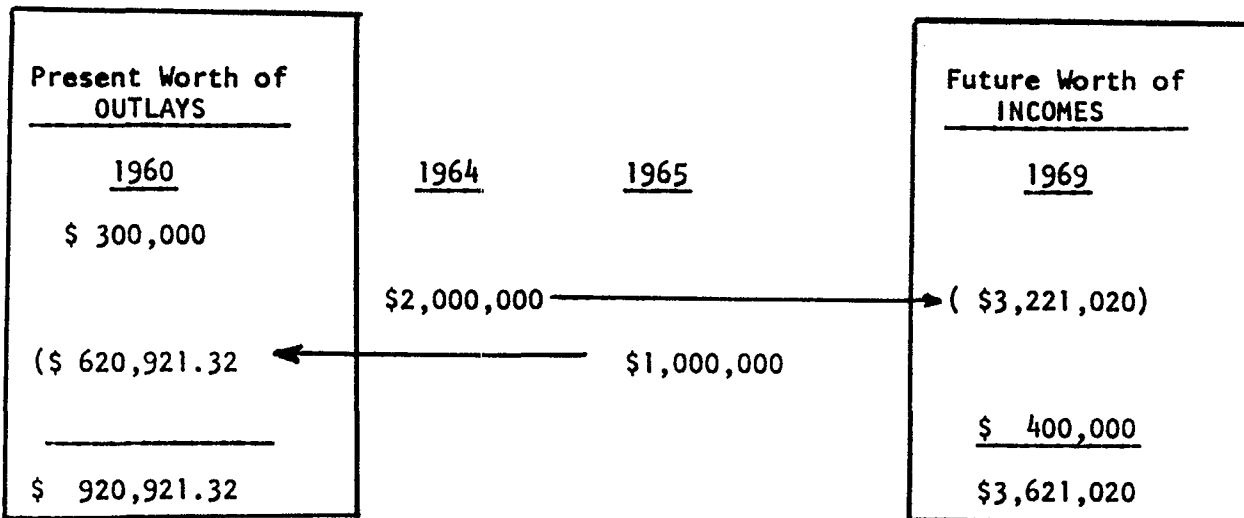
IRR = 11.8375017151

- H. Many institutions, however, feel that the internal rate of return is misleading or inappropriate for reasons particularly relevant to real estate.
1. The internal rate or Inwood discounting assumes that capital recapture is reinvested immediately at the same rate at which you are discounting. (Reinvestment rate)
 2. More investments today are non-conventional - a series of outlays interspersed with a series of returns and IRR cannot be computed by interpolation and algebraically the equation would have as many roots as there was a change in direction in net outlays per period versus net receipts.
 3. Equity investment does not occur on a continual basis but rather at erratic points in time and much equity money is qualified as limited partnership money, money raised by a public offering of stock, or participations as a condition of a loan with the result that the cost of money changes significantly over time and with the size of the project. Thus both the cost of capital and the reinvestment rate available for proceeds may differ from the yield on a specific investment.
1. The result that has been that development of what is called the modified internal rate of return (MIR). In MIR you first determine the present value of a series of outlays by discounting at the opportunity cost of capital. You then compound receipts forward to the end of a forecast period at the reinvestment rate. Having determined the present value of the outlay and the future compound value of the receipts, it is possible to solve for the internal rate of return. Consider the following example:

Suppose we have the following outlays and incomes:

<u>OUTLAYS:</u>	Jan. 1, 1960	\$ 300,000
	Jan. 1, 1965	<u>1,000,000</u>
<u>INCOMES:</u>	Jan. 1, 1964	2,000,000
	Jan. 1, 1969	400,000

and the cost of capital rate is 10% p.a. compounded annually.



$$920,921.32 (1 + i)^0 = 3,621,020.00 = 16.43\%$$

11. Determining average rate of return or present value of a stream of benefits with Inwood discounting or modified rate of return techniques are called retrospective measures of yield and are found on the last three lines of the computer output.
- A. Many decisions are made at the margin, i.e., what will the return be next year on the liquidating on my investment this year. This approach to investment analysis is found on the cluster of four ratios described as:
1. Return on net worth before taxes
 2. Return on net worth after taxes
 3. Cash return on original cash equity before tax
 4. Cash return on original cash equity after tax
- B. Which ratio is the correct one depends on the investor and the kind of decision he needs to make and his risk preference pattern.
1. How important is payback and which profit center does he include?
 2. What is his opportunity cost of money - if it's low retrospective yield will be adequate but if it is high he will work at the margin of prospective yields.
 3. Which profit centers is the borrower-developer willing to sell and which ones does he wish to keep? Where do they occur in time relative to a closing of a permanent loan?
- C. One set of numbers implies we are dealing with conditions of certainty but in fact risk management requires that we analyze the degree of variance which may occur and find legal contracts, physical design, marketing monopolies, and escape clauses which adjust our alternatives and control the final impact on cash.
1. First duty is to conserve existing net worth
 2. A lower priority is to realize future expectations
 3. An unknown priority is the desire to save credibility

III. Reference back to morning discussion on risk management and consider some of the following illustrations of risk control.

A. Basic tools of risk management include:

1. Eliminate risk exposure
2. Reduce frequency or severity of loss
3. Combine risks to increase predictability
4. Shift risk by contract
5. Shift risk by combination by contract
6. Limit maximum loss
7. Hedging
3. Performance incentives

B. To avoid the risk of rentup - pre-lease or to cover a default point:

1. Market research to establish monopoly of the competitive edge
2. Design to lower costs to reduce mortgage debt on a motel
3. Sell blocks of rooms to corporations during first two years of operation
4. Purchase completed, zoned building sites which have passed environmental screens

C. Warehouse lease to GM as an example of hedging against failure of GM to renew lease while retaining immediate profit centers.

D. Assigning risk to those with ability to control risk as in a joint venture:

1. Contractor guarantees construction costs
2. Money partner guarantees loan at specific terms
3. Both partners share expected marketing costs of condominium
4. Money partner takes risk of extended marketing cost in return for increasing equity share

E. Dynamic risks reflect managerial ability and willingness to work at a tough problem. Compensation to management should provide rewards at the same time that management creates profits for passive investors.

1. Earnouts
2. Shaping floors and ceilings for participation in cash flows
3. Incentive commission contract
4. Shift of variance as penalty on management

MORTGAGE BANKERS ASSOCIATION SCHOOL

Underwriting Income Property Appraisal

Prepared by

Prof. James A. Graaskamp

University of Wisconsin

- I. In general the distinction between mortgage lending on single family homes and income property is found in the methods available for risk management of critical assumptions. Specifically relevant to appraisal, the single family appraiser is basically a property inspector who is concerned with the physical property as it related to market standards. An income property appraisal is concerned with far more detail on the occupants, and the relationship of activities housed to the neighborhood as well as lease terms and impact.
 - A. Residential mortgage loans have become standardized or fungible units which permit specialization in risk bearing among large institutions.
 1. Title, property and government disaster insurance
 2. VA, FHA, and PMI guarantees
 3. Sale to secondary markets with recourse
 4. Variable rate mortgages
 5. GNMA portfolio pass-through guarantees
 6. Geographic diversification and long term portfolio liquidation and recycling
 7. Pride of borrower in family, property, and credit for personal motivation
 - B. Each income property loan is relatively unique because it is financing a small business whose primary asset and income source is the real estate.
 1. Lack of secondary market institutions
 2. Lack of homeowners' irrational motivations
 3. Sensitivity to marketing and management of a unique product vulnerable to functional and locational obsolescence
 4. Wide spread use of exculpatory clauses
 - C. An income property loan is a straddle in the space time futures market
 1. Cost of straddle
 2. Motivation - pleasure, pain, and bail out
 3. Adjusting the property, the people, and the package.
- II. Any property is intended to house specific activities at a certain location. All debt service payments depend on revenue and revenue depends on fit of site and building to tenants.
 - A. Physical analysis
 1. Physical attributes
 2. Legal attributes
 3. Linkage attributes
 4. Dynamics attributes
 5. Environmental attributes

B. Tenant mix (Compare office building and shopping center)

1. Number of full floor tenants and long term leases
2. Number of small tenants and short term leases
3. Major tenants receiving subsidy
4. Scale of market

C. Operating expenses

1. Operating efficiency of design
2. Escalator formulas on expenses
3. Opportunity to adjust base rents
4. Short term gross long term triple net

D. Physical design affecting marketing

1. Bay size and depth to outside wall
2. Adequacy of parking and access
3. Horizontal and vertical circulation systems (architectural barriers)
4. HVAC, efficiency
5. Adjustable interior wall and ceiling systems

E. Amount and quality of income from leases and adequacy of cushions
(default point, debt cover ratio, loan to value ratio)

1. See checklist of lease items
2. Motivation of people in the project

III. Motivation of people requires the lender to understand borrower sources of profit and vulnerability to economic pain.

A. Knowing the borrowers sources of cash satisfaction from the project identifies both the source and strength of motivation and the need for definition to prevent short term profits at the expense of long term stability.

1. Knowing the profit centers - amount and timing
2. Degree of equity build-up
3. Degree and timing of tax shelter
4. Cash needs of borrower
5. Controls on discretionary cash expenses
6. Profit center earn-out formulas
7. Provision for future cash needs

Reserves

Compensating balances

Letters of credit

Performance bonds

Segregated liquid securities

Sinking funds

B. Payment according to terms of note can also be facilitated by progressive application of legal muscle - a type of pain stimuli which runs the spectrum from reduction of cash profit centers through operation of cash control and earn-out formulas to seizure of property and even criminal indictment.

1. Partial personal endorsement
2. Partial personal guarantees of rental income
3. Blanker mortgages
4. Claim for legal expenses of collection or enforcement
5. Assignment of leases to the lender with condition subsequent
6. Assignment of stock control interests with condition subsequent
7. Assignment of liquor licenses, route permits, or other regulatory permits and franchise agreements
8. Subordination of chattel mortgages, owner fees and salaries, etc.
9. Cognovit note - automatic receivership - loss of control
10. Foreclosure
11. Threat of suit

Fraud through the mails
 Securities law violations
 Other

- C. Packaging of income property financing uses combinations of mortgages, land leasing, equity partnerships and financing by tenants to improve returns and reduce risk of economic discomfort. Any package is intended to reduce the down payment risk of loss, reduce the loan constant per \$1,000 or reduce the investment exposure of any single investor (Danger: Partial ownership of real estate may convert traditional real estate finance to status of investment security).
- D. Reduce the down payment
 1. High loan-to-value ratios with basket clause notes
 2. Land contracts
 3. Secondary refinancing
 - Second mortgages and wrap arounds
 4. Dividing responsibility between landlord and tenant financing
 5. Land leasing and sale and lease backs
 6. Government guaranteed high ratio loans
 7. Direct government price reductions through land write downs
- E. Reduction of mortgage loan constant
 1. Stretch out payments
 2. Reduce base interest and replace with contingent interest
 3. Eliminate amortization with interest-only loans, lease backs
 4. Subsidized interest with tax exempt capital from government
 5. Contingent interest by raising capital from limited partners
- F. Reduce investment by any single individual
 1. Co-op or condominium
 2. Partnerships - limited or general
 3. Real estate trusts - mortgage or equity
 4. Loan participations
 5. Real estate corporation

- IV. Underwriting must provide pleasure, pain and vail out or at least two out of three. The underwriter should anticipate ownership of the real estate and determine what would be necessary to convert the real estate to cash from sale following foreclosure or to permit recovery from income generated by the real estate.
- A. What elements of ownership are needed to facilitate resale?
 - B. What rental rate would permit cash breakeven?
 - C. How could a voluntary conveyance be negotiated?
 - D. What holding power or capacity does borrower have for specific performamce and what strength of character does he have? Is that holding power discretionary or attachable?
 - E. What guarantees are available on loan?
 - F. What guarantees are available on leases assigned?
 - G. Is there any value to possible claims against third parties such as the appraiser, the surveyor, the CPA, contractors, public agencies, etc.?
 - H. What other uses might be appropriate for conversion of the property?
 - I. How would foreclosure affect tenants on property according to lease terms, subordination, etc.?
 - J. How would foreclosure affect balance sheet and earnings of lender?
 - K. How would foreclosure affect income tax position of lender?

MARKET AND MERCHANDISING FEASIBILITY

MBA Income Property Financing Conference

Instructor: Professor James A. Graaskamp, CRE, SREA
University of Wisconsin School of Business

1. Basic Concepts and Definitions

- A. Real estate is a tangible product - defined as artificially delineated space with a fourth dimension of time referenced to a fixed point on the face of the earth.
 1. Real estate is a space-time unit, room per night, apartment per month, square foot per year, tennis court hours, or a condominium for two weeks in January at a ski slope.
 2. To the space-time abstraction can be added special attributes to house some form of activity.
 3. Improvements from survey market to city layouts to structures define space.
 4. Legal contracts and precedents define time.
 5. Rights of use are defined by public values, court opinions.
 6. Private rights to use are those which remain after the public has exercised its rights to control, to tax, or to condemn.

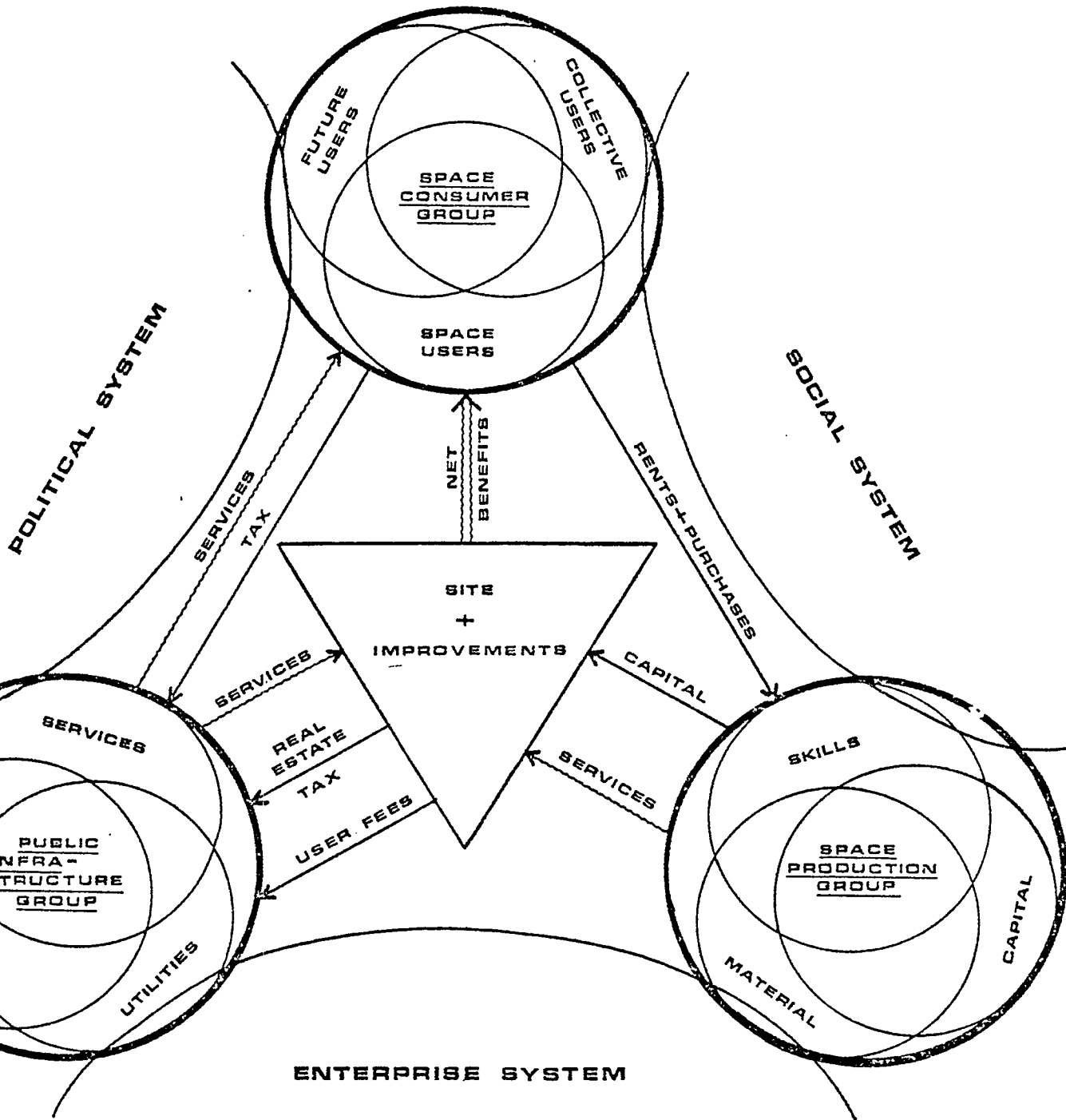
- B. A real estate project is cash cycle business enterprise which combines a space-time product with certain types of management services to meet the needs of a specific user. It is the process of converting space-time needs to money-time dimensions in a cash economy.
 1. A real estate business is any business which provides expertise necessary to relate space-time need to money-time requirements and includes architects, brokers, city planners, mortgage bankers, and all other special skills.
 2. The true profit centers in real estate are in the delivery of services and cash capital. Money is an energy transfer system.
 3. Equity ownership is the degree to which one enterprise controls or diverts cash from another real estate enterprise.
 4. Public has direct ownership to the degree real estate taxes take a percentage of tenant income in excess of service cost.
 5. Consumer must view space as a total consumption system involving direct cost, surface cost, transportation cost and negative income of risk.
 6. The best real estate project is the one which has the lowest net present value of cost as the sum of cost to the consumer production sector and public sector.

- C. The real estate process is the dynamic interaction of three groups, space users (consumers), space producers, and the various public agencies (infrastructures) which provide services and capital to support the consumer needs. (See Exhibit 1)
1. Each of these three decision groups represent an enterprise, an organized undertaking. All are cash cycle enterprises constrained by a need for cash solvency, both short and long term.
 2. A desirable real estate solution occurs when the process permits maximum satisfaction to the consumer at a price that he can afford within the environmental limits of land while permitting the consumer, producer, and the government cash cycle to achieve solvency - cash break even at a minimum, after full payment for services rendered.
 3. Solvency of the total process, not value, is the critical issue.
 4. Land is an environmental constraint and not a profit center.
 5. Land provides access to a real estate business opportunity and is not the opportunity itself. Real estate business wants to control land to create a captive market for services.
- D. Land is the point where demand and supply forces find cash solvency. Location is a manufactured attribute. Site attributes are exploited to reduce outlays and to increase receipts and include:
1. Physical attributes
 2. Legal-political attributes
 3. Linkage attributes
 4. Dynamic attributes
 5. Environmental attributes
- E. Recognition of the fact that profit maximization must be limited by concerns for physical environment and community priorities for land use has resulted in redefinition of the most basic concept in appraisal; i.e. highest and best use, in the authorized terminology handbook sponsored by the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers. Compare the 1971 definition with that for 1975:

Highest and best use concept-

"A valuation concept that can be applied to either the land or improvements. It normally is used to mean that use of a parcel of land (without regard to any improvements upon it) that will maximize the owner's wealth by being the most profitable use of the land. The concept of highest and best use can also be applied to a property which has some improvements upon it that have a remaining economic life. In this context, highest and best use can refer to that use of the existing improvements which is most profitable to the owner. It is possible to have two different highest and best uses for the same property: one for the land ignoring the improvements; and another that recognizes the presence of the improvements.:

p. 57, Real Estate Appraisal Principles and Terminology, Second Edition, Society of Real Estate Appraisers 1971.



THE REAL ESTATE PROCESS

"Highest and Best Use: That reasonable and probable use that will support the highest present value, as defined, as of the effective date of the appraisal. Alternatively, that use, from among reasonably probable and legal alternative uses, found to be physically possible, appropriately supported, financially feasible, and which results in highest land value. The definition immediately above applies specifically to the highest and best use of land. It is to be recognized that in cases where a site has existing improvements on it, the highest and best use may very well be determined to be different from the existing use. The existing use will continue, however, unless and until land value in its highest and best use exceeds the total value of the property in its existing use. Implied within these definitions is recognition of the contribution of that specific use to community environment or to community development goals in addition to wealth maximization of individual property owners. Also implied is that the determination of highest and best use results from the appraisers judgement and analytical skill, i.e., that the determined from analysis represents an opinion, not a fact to be found. 'In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value) another appropriate term to reflect highest and best use would be most probable use. In the context of investment value an alternative term would be most profitable use."

Real Estate Appraisal Terminology, Edited by Byrl H. Boyce, Ph.D. SRPA, Ballinger Publishing Co., Cambridge, Mass. 1975

- F. The purchase of a piece of real estate today involves the acceptance of a great many assumptions about the future. Those who take care to validate these assumptions in a period of transition as to public land use control tend to have the most successful investment.
1. Business decisions today make explicit recognition of their assumptions and the need to act under conditions of uncertainty.
 2. Business risk is the difference between assumptions about the future and realizations, the proforma budget and the end of the year income statement.
 3. Risk management is the control of variance between key assumptions and realizations.
 4. An appraisal is a set of assumptions about the future productivity of a property under conditions of uncertainty.
- G. The concept of highest and best use of land was a commodity concept which did not consider externalities adequately. It is being replaced by concepts of most fitting use and the concept of most probable use.
1. The most fitting use is that use which is the optimal reconciliation of effective consumer demand, the cost of production, and the fiscal and environmental impact on third parties.
 2. Reconciliation involves financial impact analysis on "who pays" and "who benefits" - thus the rash of debate on how to do impact studies.

3. The most probable use will be something less than the most fitting use depending on topical constraints imposed by current political factors, the state of real estate technology, and short term solvency pressures on consumer, producer, or public agency.
 4. Most probable use means that an appraisal is first a feasibility study of alternative uses for a site in search of a user, an investor, and in need of public consent.
- H. In seeking the most fitting and most probable use, the inner city planner and private property appraiser must interact to determine how community objectives and consumer - production sector solvency can be achieved simultaneously.
1. A real estate decision has only two basic forms. Either a site is in search of a use and consumer with the ability to pay, or a consumer, need or use with a defined ability to pay is seeking some combination of space-time attributes he can afford.
 2. The individual consumer with needs and a budget is the drive wheel.
 3. The public sector represents the community owned consumer service delivery system, seeking to minimize marginal cost to the consumer and average cost to the community at large.
 4. The production sector responds to a derivative demand for engineering and management expertise.
- I. Critiquing the form and adequacy of a real estate solution is analogous to the artistic concept of judging the success of an art object by relating form of the solution to the context to which it was created.
1. Context includes those elements which are fixed, given, or objectives and to which any solution must adapt.
 2. Form giving elements are those variables within the artists control, i.e. options or alternatives at a particular time.
 3. A solution is judged for its correctness or success in terms of the degree of fit of the form proposed to the context.
 4. Feasibility analysis is concerned with the degree of fit or the extent of misfit between a proposed course of action and the context within which it must operate or fit.
 5. Success therefore depends on how appropriately the problem is defined; testing feasibility depends primarily upon accurate and comprehensive definition of the context.
- J. An enterprise is any organized undertaking, and a real estate problem or project always begins from the viewpoint of some enterprise relative to its environment.
1. The systems engineer sees the eventual form of an enterprise, in terms of both its configuration and behavior, as representing a negotiated consensus between two general sources of power--the power of the environment to dictate form and behavior of the organization on one hand and the power of the organization to decide for itself what its characteristics and behavior will be on the other.
 2. The system engineer uses "power of the environment" as a dynamic alternative to the static implications of context and adds dynamic element of behavior to the elective responses of the form giver.

II. Financial Management and Risk Management

Investment is a real estate enterprise as mortgage lender or equity investor is simply buying a set of financial assumptions about the interaction of the project to its context, of the firm to its environment. Real estate analysis is to control the variance between expectations and realizations, between proforma prospects and historical balance sheets and profit and loss statements.

- A. Analysis is risk management, control of variance.
- B. There are essentially two types of risk exposures:
 - 1. Static risks (uncontrollable, or external events) are those which can only cause a loss due to surprise upset of a plan.
 - 2. Dynamic risks (partially controllable internal events) can produce profit or loss and are best controlled by the finesse of management execution of a plan.
- C. Risk evaluation or comparison grows out of the function of risk management for an enterprise.
 - 1. Risk management has two objectives:
 - a. First priority - conservation of existing enterprise assets despite surprise events.
 - b. Second priority - realization of budgeted expectations despite surprise events.
 - 2. The process of risk management involves systematic and continuous:
 - a. Identification of significant exposures to loss
 - b. Estimation of potential loss frequency and severity
 - c. Identification of alternative methods to avoid loss
 - d. Selection of a risk management method
 - e. Monitoring execution of risk management plan
 - 3. The risk management process is both a philosophy of inquiry or analysis and a checklist of management concern, which is attempting to answer systematically "WHAT IF...?" questions, to anticipate surprise and to provide for a response or adjustment in advance of the contingency.
- D. Identification of significant exposures to loss can begin by using standard business documents as reminders, such as:
 - 1. Review of balance sheet accounts
 - 2. Review of profit and loss statement accounts
 - 3. Review of business organization or function chart
 - 4. Review of elements of financial feasibility analysis
- E. Significant has to do with potential loss frequency, loss severity, and degree of uncertainty.
 - 1. Very frequent and minor become expense accounts
 - 2. Less frequent but predicatable and major become reserves or budget allowances.

3. Infrequent, uncertain but very severe become issues of risk management.
 4. A 50/50 probability is the most uncertain outcome.
- F. The alternative methods of avoiding loss which everyone sub-consciously uses include:
1. Eliminate risk exposure
 2. Reduce frequency or severity of loss (diversification or mortgage loan closing process)
 3. Combine risks to increase predictability (reserves for expense)
 4. Shift risk by contract (subcontracts or escalator clauses)
 5. Shift risk by combination (diversification) by contract (insurance)
 6. Limit maximum loss (corporate shell or limited partnership)
 7. Hedging (sale and leaseback, options, contingent sales)
- G. Risk management concepts leads to understanding of the true essence of a mortgage contract and an equity commitment
1. A mortgage is a classic straddle in two markets for the borrower; it is a call on a space-time commodity in a rising market and a put to the lender in a falling market. It is also a straddle in the money market. The mortgage contract is a risk management agreement to provide coverage of static risks and an imperfect straddle on the dynamic risks. Protection for the lender is revenue to the borrower, negative incentives, and salvage.
 2. Equity ownership is the degree to which you can divert cash flow and maintain control within an acceptable level of risk avoidance.

III. Feasibility Analysis

- A. The concept of feasibility is elusive and much abused. Combining the systems concept of enterprise under conditions of uncertainty and the physical design concept of fit leads to the following definition:
- "A real estate project is 'feasible' when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources.
- B. The problem of defining objectives and measuring success depends almost entirely on correctly defining the problem and values of the client.

The majority of enterprises are not solely interested in rate of return on investment or lowest cost.

Most decisions must fit a combination of success "measures" with each decision maker weighting the overall importance of each item differently. Examples of such measures would be:

1. A check list of physical attributes
2. A check list of critical linkage attributes
3. A check list of dynamic behavioral attributes

4. A check list of attributes or services (given weighted point scores)
5. Financial ratios measuring risk, such as cash break-even, rate of capital recapture, loan ratios or sensitivity to specified contingencies
6. Probability distributions of alternative outcomes and standard error of the estimate
7. Pshychological gratifications
8. Specified legal attributes
9. Measures of impact on environment

C. The definition also implies uncertainty - a reasonable likelihood of succeeding. That statement is deliberately short of a statistical probability statement. However, analytical judgments can produce some verbal probability statements (that horse is a nag while the black stallion is an odds on favorite) so that the measures of success should lend themselves to explicit recognition of the degree of uncertainty with which success might be achieved.

D. The general theory of the management process for any enterprise can be converted to real estate semantics for feasibility:

Values, objectives, policy	Strategic format
Search for opportunity alternatives	Market trend analysis
Selection of an opportunity	Merchandising target with monopoly character
Program to capture opportunity	Legal-political constraints
	Ethical-aesthetic constraints
	Physical-technical constraints
	Financial constraints
Construction of program	Project development
Operation of program	Property management
Monitoring and feedback	Real estate research

E. The analyst must also identify and measure or define the limited resources of the client in terms of personnel, expertise, available cash resources, and the time line of expectations and commitment since time available to achieve the solution is often a critical resource and constraint relative to alternative choices.

F. These basic elements and definitions then lead to a correct title for the report required. Most feasibility reports go wrong on the title page because the analyst did not clearly understand to which elements of context and form his report was to be addressed. Seldom does the analyst do a complete feasibility study as a single report on his own. Components may be provided by others and the sequence of sets may differ in each case depending on how the consultant understands the client. Therefore, a report should be entitled as one of the following:

1. Strategy study: selection of objectives, tactics, and decision criteria.
2. Market analysis: economic base studies or other related aggregate data review.
3. Merchandising studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
4. Legal studies: opinion on potential legal constraints, model contracts or forms of organization, and political briefs.

5. Compatibility studies of project to community planning, conservation standards, or other public policies.
 6. Engineering, land planning, and architectural studies.
 7. Financial studies: economic modeling, capital budgets, present value and discounted cash flow forecasts, rate of return analysis, financial packages.
- G. Correctly defining the context in all its basic dimensions requires a generalist; an appraiser is a generalist. A feasibility study produces a set of parameters, a set of predesigned or preoperational specifications within which a program proposal should work. The analyst and his client should always remember that the second stage of the feasibility study will be confirmation of the feasibility assumptions and parameters by technical analysis and planning by the specialists.
- H. An appraisal is a forecast of productivity of a property relative to the needs of a certain buyer group and a prediction of the price at which it would sell to the most probable buyer.
1. Anticipation of an economic behavior by the buyer leads to the highest price he would be willing to pay.
 2. Anticipation of the behavior of the seller leads to an estimate of the least he would be willing to accept.
 3. Analysis of the influence of outside factors affecting price supply and demand leads to an estimate control tendency between buyer and seller maximum.
 4. The upper and lower ranges specify a transaction zone within which a most probable price will occur. The most probable sales price does not need to be at the center of the zone nor do the alternatives need to follow a normal distribution curve. The zone and the distribution most typically are statements of verbal probability.
- I. An appraisal is therefore a feasibility study of alternative courses of action and these alternatives are matched to the most probable user/investment group to be seeking such a property opportunity at that time.

The appraisal process as a feasibility study lends itself to the following logical process:

1. What is the problem for which the appraisal is to serve as a benchmark?
2. Which definition of value would best serve the decision process?
3. What does an inventory of site attributes reveal as to the positive and negative contributions of the site to alternative uses?
4. What does an inventory of improvement attributes existing on the site reveal as to the positive and negative contributions of the improvements to alternative uses?

5. What basic alternative use programs or scenarios may be considered as plausible alternatives motivating buyers as of the date of the appraisal?
6. Which alternative use appears to be the most probable use when screened by external factors including effective market demand, political controls, forecasting risk, and potential profitability as perceived by investor/buyers.
7. What is the profile of the most probable buyer/investor for the most probable use to the degree that the profile can define the search for comparable transactions?
8. Could the appraiser simulate the purchase guidelines of a most probable buyer group if there were no sales which were thought to be comparable and appropriate to the subject situation?
9. What is the value to be justified by the appraiser using normative, traditional measures of what a buyer should do, such as the cost approach or conventional income approach?

X. Introduction to Financial Analysis

Review of property attributes and identification of alternative uses which have potential for effective demand typically narrows the alternative for further consideration to those where potential revenue can support reasonable capital budget parameters. Initial financial analysis does not involve present value theory but rather progressive refinement of ratios and risk characteristics for consumers, producers, and the public infrastructure. Analysis which follows is concerned with only the private production and finance side of the equation.

A. There are two points of departure for analysis:

1. Given the capital budget, it is necessary to convert to the required rents necessary to support the project and cash return objectives. Specified budgets converted to required rents is often called the front door approach.
2. Given market rent per unit, it is necessary to establish the maximum justified capital budget. Targeted market rents converted to justified investment can be allocated to various development budgets and is called the back door approach.

B. Refer to the front door approach exhibit and example, oversimplified for purposes of illustration. (Exhibits 2-6)

C. Refer to the back door approach exhibit and example (Exhibits 7 & 8)

1. The back door approach is the preferred response to the market although lenders typically enter the scene after the capital budget is set.
2. Note that the back door approach can be driven by a default ratio or a debt cover ratio which are dynamic risk concepts rather than loan to value ratio which is a static regulatory concept.

C. The back door approach is the essence of the FHA 2013 form, state housing finance approach to projects where revenue is defined by the FMR rules, or even purchase of an existing property subject to long term rents, renovation, etc.

1. It is possible to detail the back door approach for any type of project by simply setting up tabs in a flow chart fashion as suggested by the example for a 236 project.
2. Another way to view the flow charts is in the nature of two basic programmable formulas:

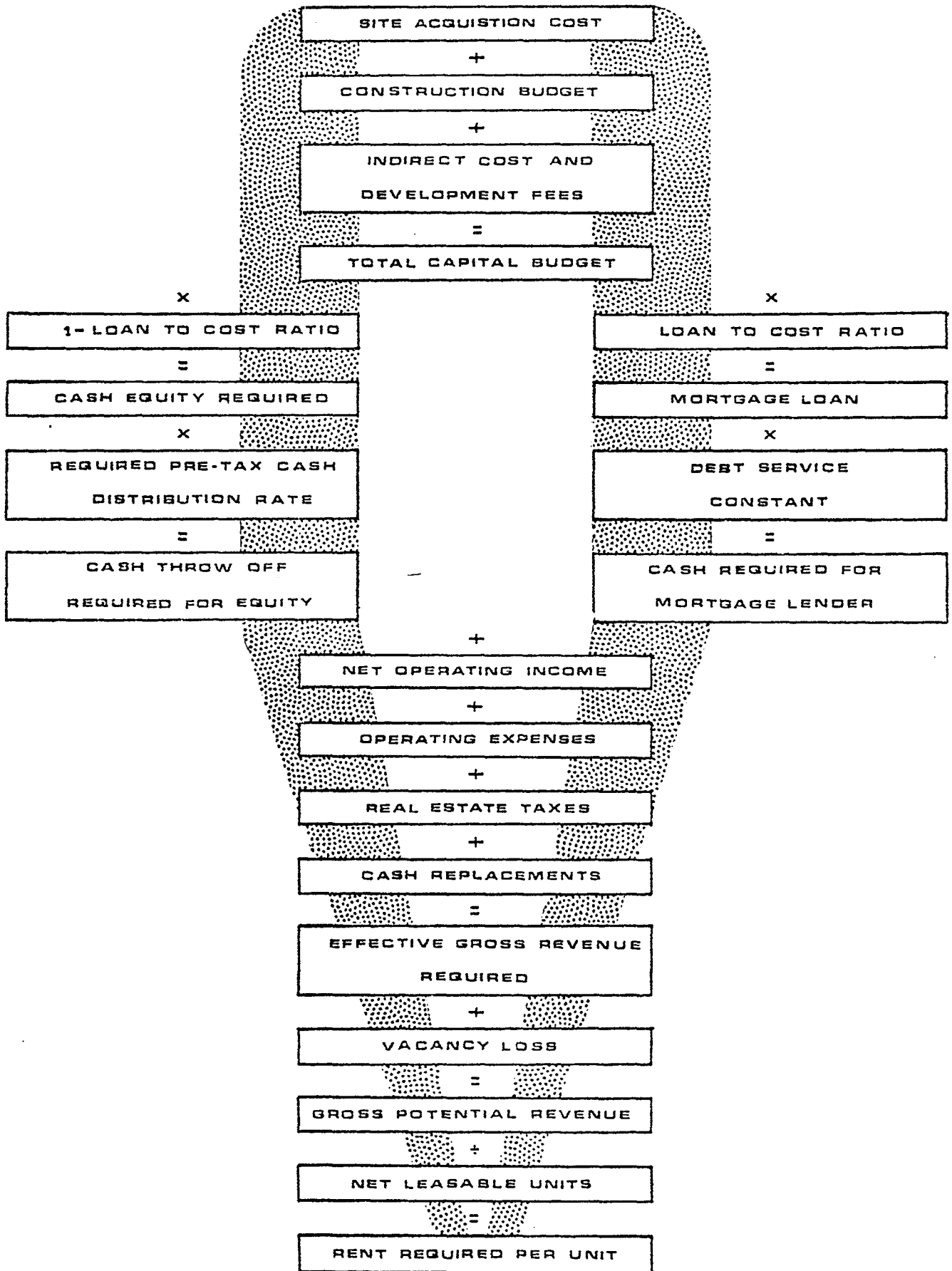
$$\text{Gross rent} = \frac{\text{TRC} * \text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}$$

$$\text{Justified project budget} = \frac{\text{GR}}{\frac{\text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}}$$

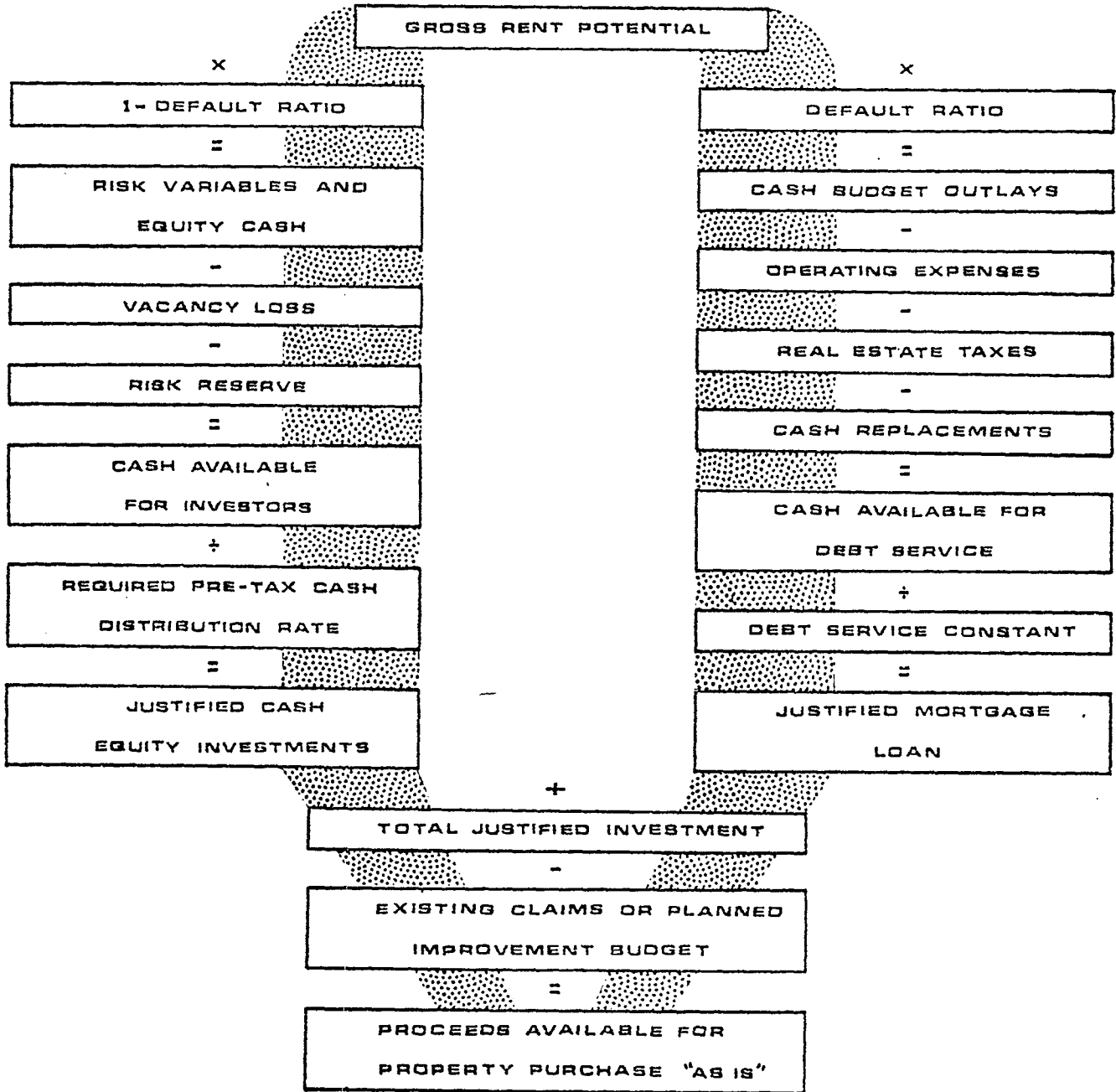
Where:

TRC = Total replacement cost; LTV = loan to value ratio
 MC = mortgage constant; CC = Cash on cash for equity cash
 ER = expense ratio; RET = real estate tax ratio
 VR = Vacancy ratio; RR = reserve ratio

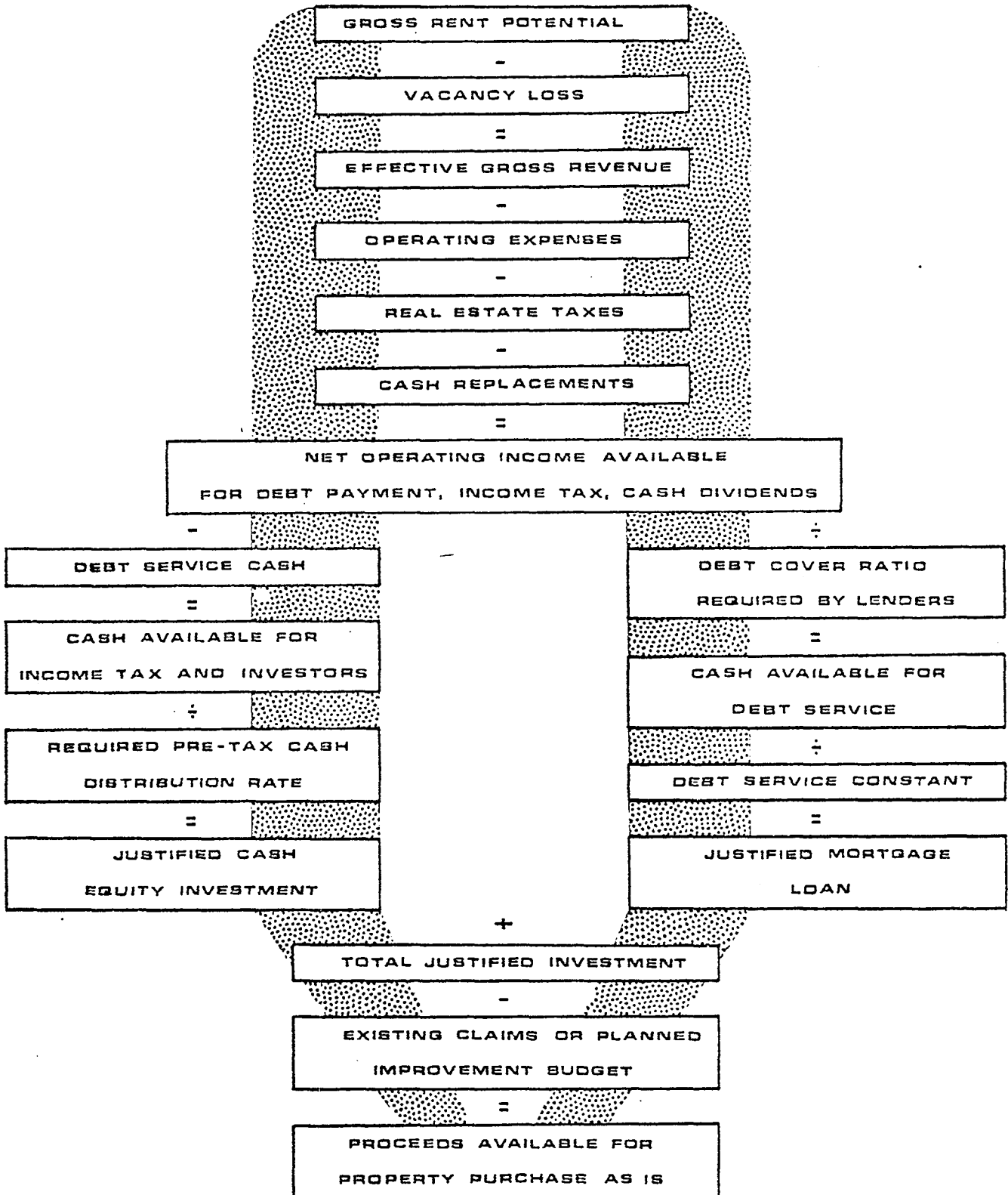
REVENUE REQUIRED BY CAPITAL BUDGET LOAN TO COST RATIO APPROACH



REVENUE JUSTIFIED CAPITAL BUDGET DEFAULT RATIO APPROACH



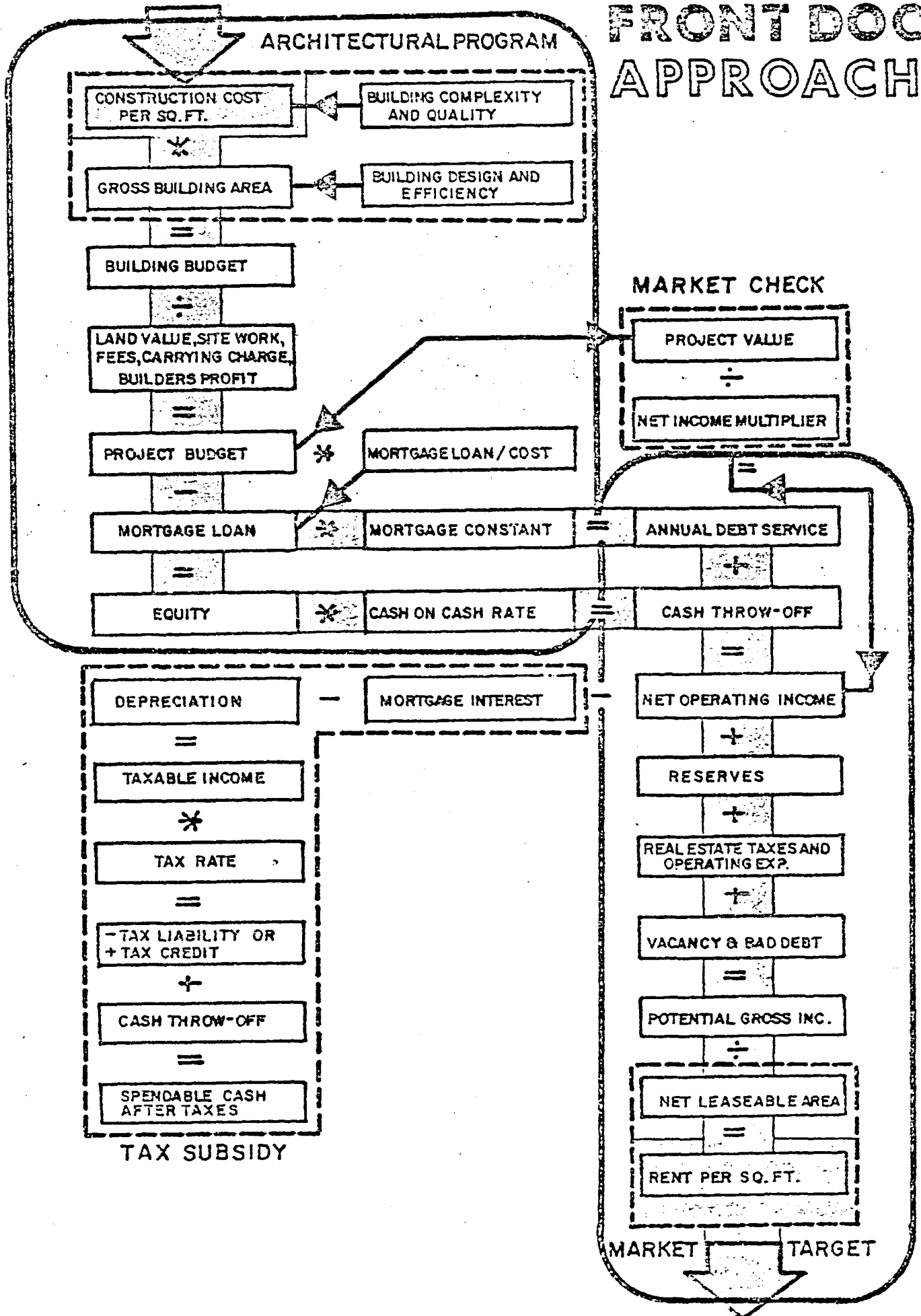
REVENUE JUSTIFIED CAPITAL BUDGET DEBT COVER RATIO APPROACH



CAPITAL BUDGET

Exhibit 5

FRONT DOOR APPROACH



OPERATING BUDGET

Exhibit 6
FRONT DOOR - MINIMUM RENT REQUIRED

\$20/sq. ft.					
X					
20,000 sq. ft.					
=					
\$400,000					
÷					
\$200,000					
=					
\$600,000					
-		(80% LTV)			
\$480,000	X	(.1025 constant)	=	\$49,200	
				+	
\$120,000	X	.07	=	\$8,400	

Default ratio:

$$\frac{\text{Debt service + expenses}}{\text{Gross rent}} = \frac{\$49,200 + 50,000}{\$116,000} = 86\%$$

Payback before taxes:

$$\frac{\text{Equity cash investment}}{\text{Equity dividend}} = \frac{120,000}{8,400} = 14+ \text{ yrs.}$$

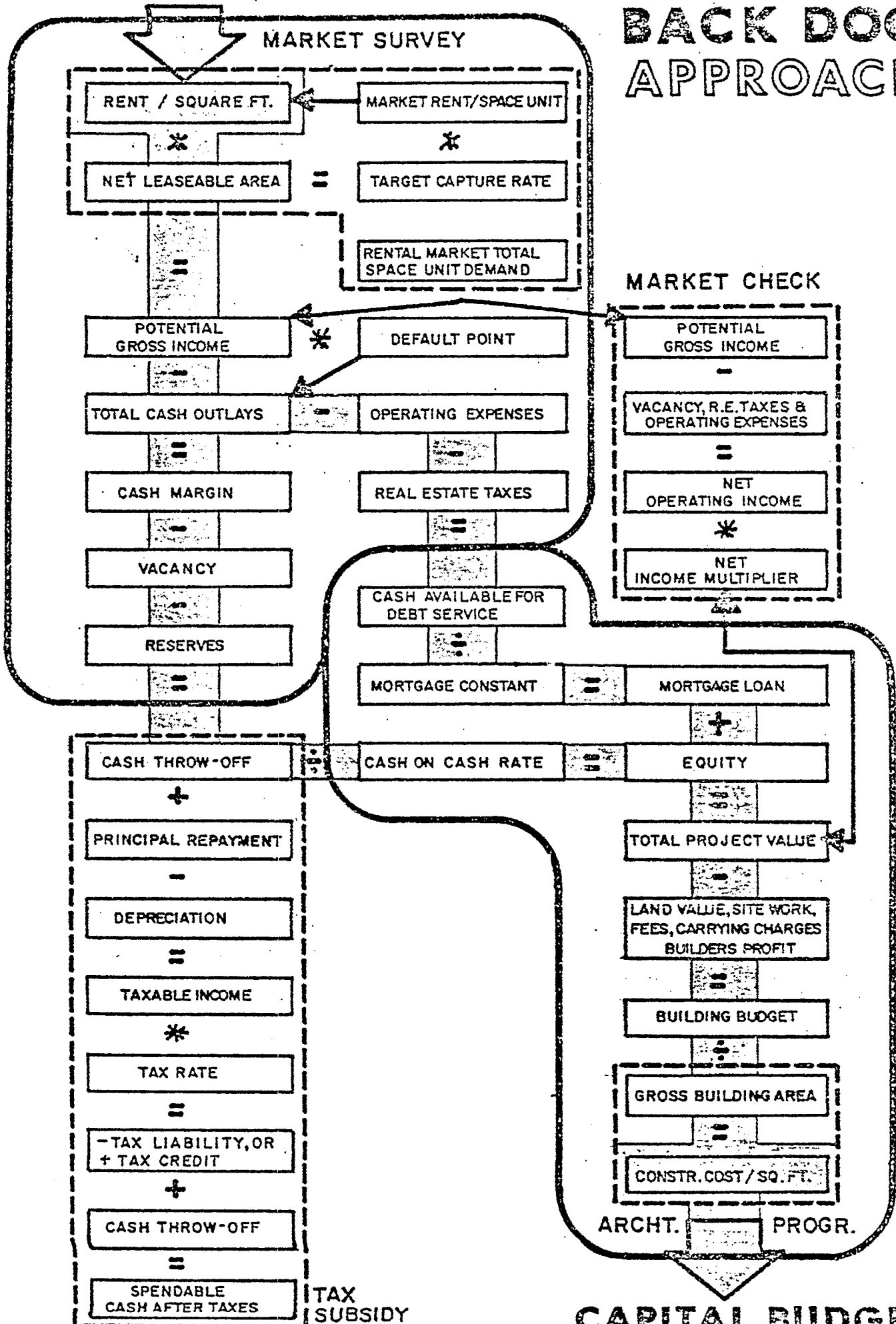
Debt cover ratio:

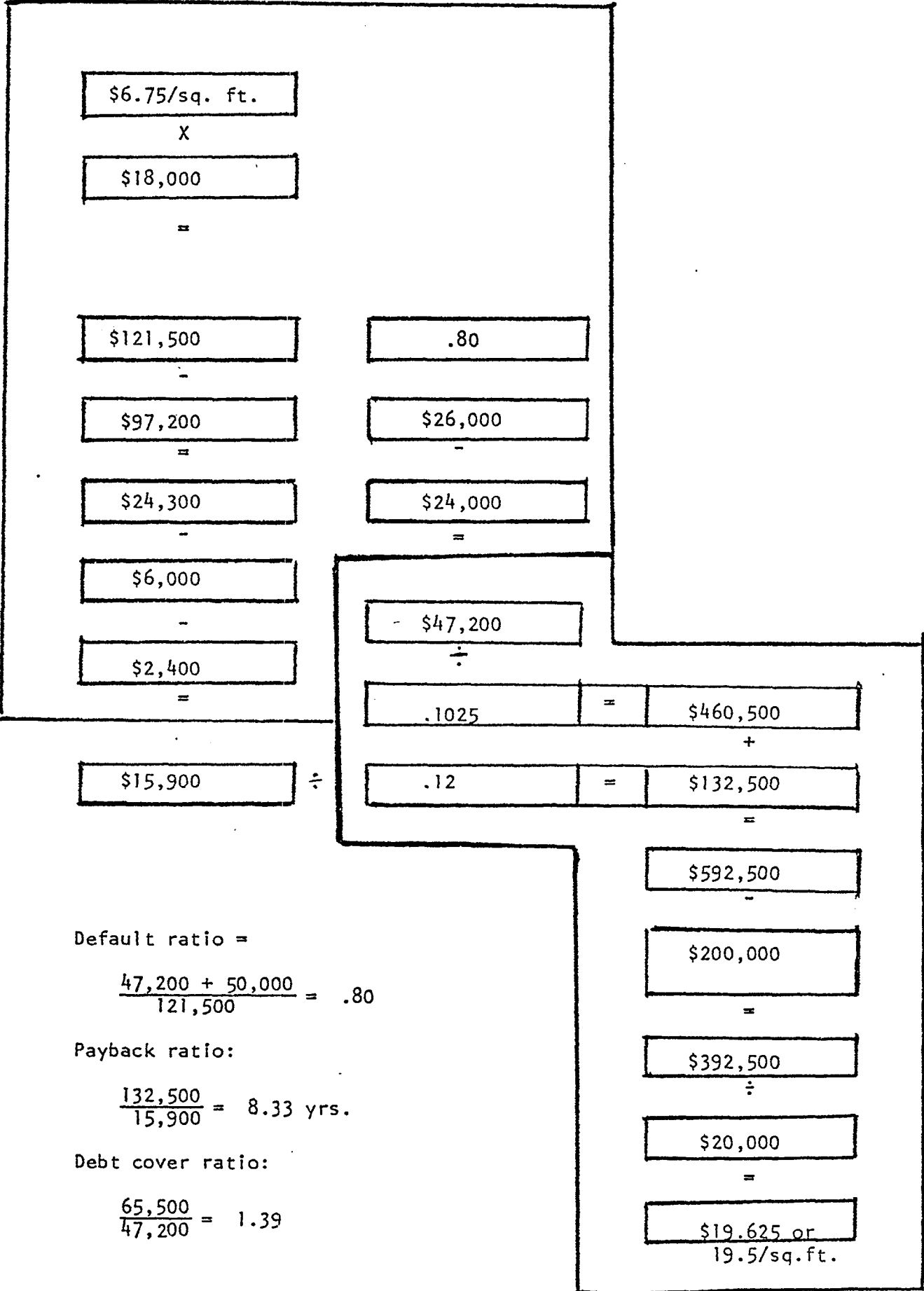
$$\frac{\text{Net operating income}^*}{\text{Debt service}} = \frac{60,000}{49,200} = 1.22$$

* NOI = gross rent - vacancy - expenses

=	
\$57,600	
+	
\$2,400	
+	
\$50,000	
+	
\$6,000	
=	
\$116,000	90% NLA
÷	
\$18,000	
=	
\$6.44-6.50/sq. ft.	

BACK DOOR APPROACH





Default ratio =

$$\frac{47,200 + 50,000}{121,500} = .80$$

Payback ratio:

$$\frac{132,500}{15,900} = 8.33 \text{ yrs.}$$

Debt cover ratio:

$$\frac{65,500}{47,200} = 1.39$$

- C. Preliminary financial analysis begins with a variety of ratios which are intended to reveal the tolerance of the project for variance in key assumptions, the ability absorb surprise, as well as dynamic risk. These ratios become the objective of further refinement through sensitivity analysis. Among the important ratios we have used so far are:

1. Absorption rate:

$$\frac{\text{Units sold or leased per period}}{\text{Total supply of units available for sale or lease}} = \text{Absorption rate}$$

2. Capture rate:

$$\frac{\text{Units in specific project sold or leased per period}}{\text{Total competitive units sold or leased per period}} = \text{Capture rate}$$

3. Vacancy ratio:

$$\frac{\text{Space unit} \times \# \text{ of units} \times \text{rental payment periods per year} \times \text{turnover rate} \times \text{rental payments lost} \times \text{rent}}{\# \text{ of units} \times \# \text{ of payments} \times \text{rent per period}} = (\text{gross rent})$$

1-bedroom apartments x 20 x 50% turnover x 1 month lost | \$200/mo.

$$\frac{20 \times 50\% \times 1 \times 200}{20 \times 12 \times 200}$$

$$\frac{2000}{48000} = \frac{1}{24} = 4.2\%$$

4. Expense ratio:

$$\frac{\text{Expenses}}{\text{Gross rent}}$$

5. Net income ratio:

$$\frac{\text{Net income}}{\text{Purchase price} + \text{additional costs}} = \text{Overall rate or cap rate (should be = to debt service constant or higher)}$$

6. Debt cover ratio:

$$\frac{\text{Net operating income}}{\text{Debt service}}$$

7. Default ratio:

$$\frac{\text{Operating expenses} + \text{real estate taxes} + \text{short term debt} + \text{interest} + \text{principal payments}}{\text{Gross rent}}$$

8. Loan to value ratio:

$$\frac{\text{Mortgage loan balance}}{\text{Purchase price}}$$

9. Cash on cash:

$$\frac{\text{Net income - debt service - reserves + refinancing surplus}}{\text{Total capital budget - original mortgage balance}}$$

D. Understanding the basic ratios leads to manual or data processing of sensitivity ratios; it is important to remember that projecting specific returns is not a forecast for the future; it is intended to be a basis for measuring the tolerance of the financial parameters for variance from the initial assumptions and identifying the thresholds of insolvency or incompatibility with competitive markets. Refer to John Nabors model in Exhibit .

E. If project makes sense before tax, then it is useful to refine analysis for projections over time on an after tax basis.

1. Accounting tabs for after tax income (See Exhibit)
2. Accounting tabs for after tax sale proceeds (See Exhibit)
3. Basic pattern of after tax financial analysis requires a pattern of assumptions (See Exhibit)

F. After tax spendable cash ratios include:

1. Distributable cash from operations:

$$\begin{aligned} &\text{Cash throwoff} \\ &\quad - \text{income taxes} \\ &\text{Cash from operations} \\ &\quad - \text{reserves} \\ &\quad - \text{repayment of working capital loans} \\ &\hline &= \text{Distributable cash} \end{aligned}$$

2. Spendable cash attributable to real estate:

$$\begin{aligned} &\text{Distributable cash} \\ &+ \text{tax savings to other income} \\ &+ \text{surplus from refinancing} \\ &\hline &= \text{Spendable cash} \end{aligned}$$

3. After tax sale proceeds:

$$\begin{aligned} &+ \text{return of working capital} \\ &+ \text{liquidation of sinking funds} \\ &\hline &= \text{cash reversion} \end{aligned}$$

4. Return on net worth B/4 tax:

$$\frac{\text{Cash throwoff + change in net worth}}{\text{Net worth at end of previous period}}$$

5. Return on net worth after tax:

$$\frac{\text{Spendable cash} + (\text{change in net worth} - \text{change in taxes on sale})}{\text{Net worth at end of previous period} - \text{taxes on sale}}$$

6. Payback ratio:

$$\frac{\text{Cumulative spendable cash}}{\text{Original budget} - \text{original debt} + \text{amount of personal guarantees}}$$

- G. Precise definition of cash returns is critical in the negotiation of participating loans and partnerships

1. Defining effective gross, net income or cash throwoff with a participation loan
2. Defining base number in which general partner will share

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	11 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT (595. SQ FT)		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
LOAN :	\$ 14625.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
REVENUE :	\$ 6.00 PER SQ FT		
VACANCY :	5.00 PCT OF LEASEABLE		
NET INCOME:	\$ 174. ANNUALLY	RUN	1

ANNUAL CASH FLOWS

LAND LEASE COST

\$	100.	\$	150.	\$	200.	\$	250.	\$	300.

EXPENSE RATES
ANNUAL \$/SQ FT

\$	2.40	625.	575.	525.	475.	425.
\$	2.64	483.	433.	383.	333.	283.
\$	2.76	411.	361.	311.	261.	211.
\$	3.00	268.	218.	168.	118.	68.
\$	3.36	54.	4.	-46.	-96.	-146.

BREAKEVEN RENTAL RATES

LAND LEASE COST

\$	100.	\$	150.	\$	200.	\$	250.	\$	300.

EXPENSE RATES
ANNUAL \$/SQ FT

\$	2.40	4.89	4.98	5.07	5.16	5.25
\$	2.64	5.15	5.23	5.32	5.41	5.50
\$	2.76	5.27	5.36	5.45	5.54	5.63
\$	3.00	5.53	5.61	5.70	5.79	5.88
\$	3.36	5.90	5.99	6.08	6.17	6.26

SENSITIVITY TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS		PAGE	12 OF 12
SITE :	2000. SQUARE FEET	DATE	2-14-1977
BUILDING :	700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT OF GROSS		
LOAN RATIO:	75.00 PCT OF \$ 19500.		
EQUITY :	\$ 4875.		
FINANCING :	30. YEARS 9.000 PCT		
REVENUE :	\$ 6.00 PER SQ FT		
VACANCY :	5.00 PCT OF LEASEABLE		
PARK/OTHER:	\$ 174. ANNUALLY	RUN	1
EXPENSES :	\$ 2.76 PER SQ FT		
LAND LEASE:	\$ 100. ANNUALLY		
CONSTRUCTION AND LAND COST	19500.		

EFFECT OF SELECTED CHANGES IN PARAMETERS
PARAMETER CHANGE INCREASE IN
CASH FLOW

INCREASE BUILDING EFFICIENCY 1 PCT	21.
INCREASE RENTAL RATE \$.10 PER SQ FT	57.
DECREASE VACANCY RATE 1PCT	36.
DECREASE OPERATING RATE \$.10 PER SQ FT	60.
DECREASE PERMANENT RATE .25PCT	31.
DECREASE PERMANENT LOAN TERM BY 1 YEAR	-10.
DECREASE PERMANENT LOAN TERM BY 5 YEARS	-61.
DECREASE THE LOAN RATIO BY 5 PERCENT	94.
DECREASE LAND LEASE BY 10% 100.	

EQUIVALENT EFFECT TO YIELD
A \$ 100. INCREASE IN ANNUAL CASH FLOW

INCREASE BUILDING EFFICIENCY BY	4.86 PCT
INCREASE RENT RATE BY \$	0.18 PER SQ FT
DECREASE VACANCY BY	2.80 PCT
DECREASE EXPENSE RATE BY \$	0.17 PER SQ FT
DECREASE PERMANENT RATE BY	0.79 PCT
INCREASE PERMANENT LOAN TERM BY	8.2 YEARS
DECREASE LOAN RATIO BY	5.3 PERCENT
DECREASE LAND LEASE BY \$	100.

CAPITAL BUDGET DECISIONS AND RISK
10:45 - 11:50
J. A. Graaskamp

I. INTRODUCTION

A. Measures of yield, risk and the loan underwriting process

1. Organizing information to exclude the irrelevant and weight the significant
2. Analysis of outlays and receipts over time allows each factor to operate quantitatively
3. The theory of offsetting error
4. Model building to structure information

B. There are a great many financial measures of profit

1. The payback period
2. Average income on book value
3. Average income on cost
4. Yield in terms of change of net worth
5. Net present value of an investment

C. Which method for which investment

1. What decision needs to be made?
2. What data is available to make it?
3. What models are available to structure the data
4. Multiple decisions may require multiple measures of return

II. CAPITAL BUDGETING DECISION THEORY

A. Mortgage decisions are accept or reject decisions. The net present value of the financial interest ala Ellwood tells you whether a proposal is in the ballpark or not.

1. Net present value methods assume a discount rate or cap rate as well as instant investment.
2. Shortcut methods such as appraisal I/OAR assume the net present value is the maximum that will be paid and that all receipts are constant or changing at a constant rate.

B. Development decisions are trade-off decisions - mutually exclusive choices which change the pattern of outlays or receipts.

1. Generally the pattern of outlays is known and a pattern of receipts has been forecasted and it is necessary to solve for the discount rate which makes them equal. This is called the internal rate of return.
2. Simple discounting assumes funds will be reinvested at the discount rate, as does internal rate of return.
3. Modern industry uses modified internal rate of return when real estate is still using net income multipliers.

III. THE CONCEPT OF RISK AND RISK MANAGEMENT

- A. Risk is the variance between expectations and realization. It has nothing to do with yield and seldom can it be left undefined and then compensated by "higher yield." Yield is a simple mathematical relationship. Risk is a qualitative analysis of the assumptions which lie behind yield analysis.
- B. The risk management process has four steps
 - 1. Identify exposures to unexpected variance
 - 2. Measure the significance -- frequency, severity and large loss priority
 - 3. Choose a method of controlling variance
 - 4. Monitor operations to see if risk control procedure is followed
- C. Techniques for controlling or avoiding unacceptable variance in outcome include:
 - 1. Avoid the exposure
 - 2. Reduce the frequency of loss
 - 3. Reduce the severity of loss
 - 4. Combine experience for predictability and accounting reserves
 - 5. Shift the risk by insurance contract for predictability and pooling
 - 6. Shift the risk by contract
 - 7. Limit liability by contract or law
 - 8. Hedge
 - 9. Ignore
- D. Loan underwriting - a risk management process
 - 1. Yield implies conditions of certainty; risk analysis measures degree of certainty
 - 2. Static risks - perils which only cause loss - identification and control
 - 3. Dynamic risks - factors which can mean a profit or a loss - identification and control through contract and motivation
 - 4. Tolerance for the surprise potential by means of loan ratios, default point analysis, contract, or holding power
 - 5. Underwriters ethical responsibility for the risks of others in the community or tenants unknown or to the land resource per se.

DESCRIPTION OF HYPOTHETICAL INVESTMENTS

INVESTMENT	INITIAL COST	NET CASH PROCEEDS PER YEAR	
		YEAR 1	YEAR 2
A	\$10,000	\$10,000	
B	10,000	10,000	\$1,100
C	10,000	3,762	7,762
D	10,000	5,762	5,762

THE PAYBACK PERIOD

INVESTMENT	PAYBACK PERIOD (YEARS)	RANKING
A	1	1
B	1	1
C	1.8	4
D	1.7	3

AVERAGE INCOME ON BOOK VALUE

INVESTMENT	AVERAGE PROCEEDS	AVERAGE DEPRECIATION*	AVERAGE INCOME (PROCEEDS LESS DEPRECIATION)	AVERAGE BOOK VALUE †	AVERAGE INCOME ON BOOK VALUE, %	RANKING
A	\$10,000	\$10,000	\$ 0	\$5,000	0	4
B	5,550	5,000	550	5,000	11	3
C	5,762	5,000	762	5,000	15	1
D	5,762	5,000	762	5,000	15	1

* ASSUMING STRAIGHT LINE DEPRECIATION. † INVESTMENT DIVIDED BY TWO.

AVERAGE INCOME ON COST

INVESTMENT	COST	AVERAGE INCOME	AVERAGE INCOME ON COST, %	RANKING
A	\$10,000	\$ 0	0	4
B	10,000	550	5.5	3
C	10,000	762	7.6	1
D	10,000	762	7.6	1

TIME	BEGINNING OF PERIOD INVESTMENT	GROWTH OF PERIOD	GROWTH DIVIDED BY BEGINNING INVESTMENT
0	1,000	100	$100/1,000 = .10$
1	1,100	110	$110/1,100 = .10$
2	1,210	121	$121/1,210 = .10$
3	1,331	—	

YIELD OF AN INVESTMENT (RATE OF RETURN)

INVESTMENT	YIELD(%)	RANKING
A	0	4
B	10	1
C	9*	3
D	10	1

* APPROXIMATE MEASURE.

PRESENT VALUE OF THE INVESTMENT RATE OF INTEREST: 6%

INVESTMENT	PRESENT VALUE OF PROCEEDS	PRESENT VALUE OF OUTLAY	NET PRESENT VALUE	RANKING
A	\$ 9,450	\$10,000	\$ -570	4
B	10,413	10,000	+413	3
C	10,457	10,000	+457	2
D	10,564	10,000	+564	1

PRESENT VALUE OF THE INVESTMENT RATE OF INTEREST: 30%

INVESTMENT	PRESENT VALUE OF PROCEEDS	PRESENT VALUE OF OUTLAY	NET PRESENT VALUE	RANKING
A	\$7,692	\$10,000	\$ -2,308	3
B	8,343	10,000	-1,657	1
C	7,487	10,000	-2,513	4
D	7,842	10,000	-2,158	2

SUMMARY OF RANKING

	A	B	C	D
PAYBACK PERIOD	1*	1*	4	3
AVERAGE INCOME ON BOOK VALUE OR COST	4	3	1*	1*
YIELD OF AN INVESTMENT	4	1*	3	1*
PRESENT VALUE: AT 6% AT 30%	4	3	2	1
	3	1	4	2

*INDICATES TIE BETWEEN TWO INVESTMENTS.

INCREMENTAL BENEFITS

INVESTMENT	YEAR	CASH FLOWS		YIELD, %	NET PRESENT VALUE AT 5%
		OUTLAYS	PROCEEDS		
Y	0	\$100.00		20	\$27.89
	1		\$20.00		
Z	2		120.00		
	0	100.00		25	23.58
	1		100.00		
	2		31.25		

INVESTMENT	0	1	2	PRESENT-VALUE INDEX
X	\$-1,500	\$1,000	\$1,000	1.16
Y	\$-1,100	2,000	2,000	1.12

INVESTMENT	0	1	2	PRESENT-VALUE INDEX
Y - X	\$-1,600	\$1,000	\$1,000	1.08

OUTLINE OF LECTURE

BASIC PARADOXES OF INCOME PROPERTY MORTGAGE LOANS

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School of Mortgage Banking - Course III Northwestern

- I. OBJECTIVES OF THE INVESTOR (TRADE MONEY FOR TALENT)
 - A. Safety
 - B. Yield
 - D. Planned liquidity

- II. OBJECTIVES OF BORROWER (TRADE TALENT FOR MONEY)
 - A. Shifting the risk of high risk real estate
 - B. Paying less for money than what it will earn
 - C. Remaining fully leveraged

- III. A SYNTHESIS OF THE EXTREMES
 - A. The vested interest of continued profits
 - B. The latent potential of painful losses
 - C. Take-over and bail-out by the lender

- IV. THE COMMON DENOMINATOR - MONEY OVER TIME
 - A. The profit center viewpoint
 - B. The time-line of financial events
 - C. The capital budget
 - D. The revenue and expense pattern

BASIC PARADOXES OF INCOME PROPERTY MORTGAGE LOANS

- E. The financing structure
- F. The income tax structure
- G. The selected measure of yield
- H. The defined indices of risk

V. "PUTTING IT ALL TOGETHER" - A MODEL FOR ANALYSIS

MORTGAGE BANKERS ASSOCIATION SCHOOL
Commercial Lease Security Checklist
Prepared by
Prof. James A. Graaskamp
University of Wisconsin

I. Definitions

- A. Specific space and location to be leased
- B. Specific business entity as lessor
- C. Specific business entity as lessee
- D. Specific description of real estate elements to be leased
(Definition of shell provided by landlord and finishes provided by tenant)
- E. Specific exemptions of tenant improvements to remain tenant property

II. Conditions for Commencement of Lease

- A. Conditions permitting cancellation by landlord (lessor)
 - 1. Failure to obtain specified financing prior to construction
 - 2. Death or disability prior to a certain date
 - 3. Impossibility of performance due to acts of God, government, regulation, labor conditions, etc.
- B. Conditions permitting cancellation by tenant (lessee)
 - 1. Completion according to specification
 - 2. Completion according to scheduled time
 - 3. Conditions relative to other occupancies
- C. Remedies of landlord
 - 1. Forfeiture of tenant deposits or escrow funds
 - 2. Liquidated damage provisions
 - 3. Guarantees by others
 - 4. Penalty rents, assessments, etc.
- D. Remedies of tenant
 - 1. Postponement of commencement date
 - 2. Rental abatement
 - 3. Cancellation of lease at option of tenant
 - 4. Penalty payments in contract assessed to the landlord
 - 5. No penalties other than suit for damages

III. Conditions for termination of lease

- A. Death or disability at option of lessee estate
- B. Scope of "change in conditions" clause

- C. Guaranteed occupancy and operations clause
- D. Cancellation liquidated damages formula
- E. Bankruptcy receivership of business termination clause
- F. Assignability clause
- G. Implied good faith effort of percentage lease
- H. Permitted uses clause
- I. Casualty loss event
- J. Condemnation events
- K. Specific conditions subsequent explicitly identified as grounds for termination
- L. Subordination position

IV. Rental Formula

- A. Basic minimum rent
- B. Formula for rental adjustment over time
- C. Renewal options, if any, and base rent
- D. Calculation of prominent area charges and tenant participation in same
- E. Real estate tax escalator clause
- F. Insurance premium stop loss clause
- G. Utility expense stop loss clause
- H. General maintenance and replacement assessments for HVAC, parking, lighting, etc.
- I. Audit of sales and overage rents
- J. Conditions for rental abatement due to casualty loss, remodeling, road construction, or business interruption due to riot, strike, civil commotion, or disruption of public services