JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS
I.   MANUSCRIPTS
    A.   Published Books
        12.   "Recent Trends in Real Estate Investment Valuation":
              Included as part of Chapter 12 in <u>Real Estate</u>, by
              Arthur Weimer, Homer Hoyt and George Bloom, Ronald
              Press Company, Sixth Edition, pp. 353 - 361, (1972)

SIXTH EDITION

REAL ESTATE

- ARTHUR M. WEIMER
- HOMER HOYT
- GEORGE F. BLOOM

RONALD

✳ STUDY PROJECT 12–1 ✳

Recent Trends in Real Estate Investment Valuation [*]

Decisions to purchase or develop real estate are capital-budgeting decisions of some complexity, due to the relatively slow payback of total capital employed and the vulnerability of the capital-asset-to-obsolescence because the real-estate attributes of immobility, durability, and relative inflexibility of use." Nevertheless, investment decisions have generally been made under the influence of oversimplified appraisal approaches to present value theory rather than the rapidly developing techniques of capital budgeting and financial management. It is useful to trace the evolution of real estate theory and the recent infusion of modern capital budgeting techniques into urban land economics. Appraisal technique continues to center its theories for valuing discounted income streams on the truism that the stabilized income stream divided by an overall discount rate equals present value of the investment $(I/OAR = V)$. Stabilized income is a very theoretical measure of economic productivity, as it requires determination of economic rent for a given property rather than its actual cash pattern, and deduction of expenses which include both actual cash outlays and accrual reserves for items which have a shorter useful life than the structure as a whole. Net income productivity is therefore an economic concept of net surplus in a base year and this surplus is presumed to be level or declining in a continuous function implicit in the

✳ James A. Graaskamp, Associate Professor, University of Wisconsin.

selection of the capitalization rate computation. The big debate in the selection of a rate for appraisal is the need to allocate this surplus of productivity between an interest return on capital employed and recapture of the capital outlay. Straight-line capitalization would allocate a flat amount each year to capital recapture as in straight-line amortization of a bond premium charged against coupon income. Income is presumed to fall, to reflect declining interest required on unrecovered balance of the capital. No credit is given for reinvestment potentials of recaptured capital. Hoskold and Inwood capitalization systems recognize reinvestment of recovered capital by accumulating the initial capital outlay in a kind of mathematical sinking fund, reducing the required diversion of net income from profits to recapture, and thereby producing higher values for the properties. Net income surplus is always considered before payment of interest and principal on loans outstanding and before payment of the federal income tax and is extrapolated for the full useful life of the property—perhaps as much as 50 years. With time the allocation of net income productivity to recapture original investment has been modified by the introduction of residual techniques which recognized some recovery of capital from sale of the land or structural salvage at the end of its useful life. In addition, the reinvestment opportunity value of capital recapture was recognized by the reinvestment assumptions inherent in Hoskold and Inwood techniques.[1] Nevertheless, the essential fallacy remains of leveling economic income while recapitalizing to recognize present value of cash.

A major shift in appraisal valuation techniques occurred with the introduction of the Ellwood capitalization procedures.[2] Proponents of the Ellwood technique point out that the investment projection period should reflect the relatively short span of 5–10 or 15 years which characterizes a single ownership or a single-phase in structure utility before major remodeling investment necessitates full revaluation. A relatively short forecast period logically must lead to the assumption that most of the original investment would be recaptured from resale. Income productivity need only be allocated to capital recapture to the degree resale value was less than purchase price; and indeed, the formulation could value the possibility of capital appreciation. The proponents of the Ellwood technique further argue that credit terms have a major influence on market price because real estate equity investment depends so heavily on leverage. The Ellwood technique regards the credit obligation as a further claim on productivity and is therefore concerned with annual cash dividends or cash throwoff (net income less debt service) to the equity investor plus equity proceeds after debt retirement upon resale. All of this is accomplished as in Chart 1 in the method of computing the overall capitalization rate. Net income is modified to an average annual cash concept by the reduction of accrual reserves as expenses to only those items which will be

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[1] For a thorough and fair treatment see: *Income Property Appraisal*, William Kinnard, published by Heath Publishing Co., Lexington, Mass., 1971.

[2] *Ellwood Tables I & II*, 3rd ed., L. W. Ellwood; American Institute of Real Estate Appraisers, Chicago, Ill., 1970.

CHART 1. Comparison of Accounting Definitions of Real Estate
Income from Rental Property for Three Present Value Valuation System

PART I. ANNUAL RETURNS TO INVESTOR

A. Estimate Potential Gross Cash Income: Cash Income from Space Sales

B. Deductions from Potential Gross
1. Normal vacancy
2. Seasonal income loss
3. Collection losses

Traditional appraisal approach

4. Franchise fees, deposits returned, etc.

C. Add "Other" Income from Service Sales

D. Derive Effective Gross Income

E. Deduct Operating Expenses (on Expected Cash Outlay without Accrual Reserves Except for Traditional Appraisal)
1. Fixed expenses
2. Variable expenses
3. Repairs and maintenance
4. Replacements

F. Derive Net Operating Income

Ellwood mortgage equity approach

G. Deduct Annual Debt Service
1. Contract interest
2. Supplementary variable interest
3. Principal amortization

H. Derive Cash Throw-off

I. Add Back Principal Payments and Replacements

Spendable cash budget investment value approach

J. Deduct Tax Depreciation Allowance

K. Derive Taxable Income

L. Determine Income Tax on Real Estate Income

M. Deduct Income Tax from Cash-Throw Off (H)

N. Derive After-Tax Cash Flow

O. Add Tax Savings on Other Income (if K is Negative)

P. Add Surplus from Refinancing

Q. Derive Spendable After-Tax Cash

PART II. RETURNS TO INVESTOR ON RESALE

A. Estimated Resale Price*

B. Deduct Broker's Commission and Other Transaction Costs

Ellwood mortgage equity approach

C. Derive Effective Gross Proceeds from Sale

D. Deduct All Credit Claims 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

Spendable cash investment approach

1. Deduct capital gains tax
2. Deduct income tax on disallowed accelerated depreciation
3. Deduct surtax on taxable preferential income
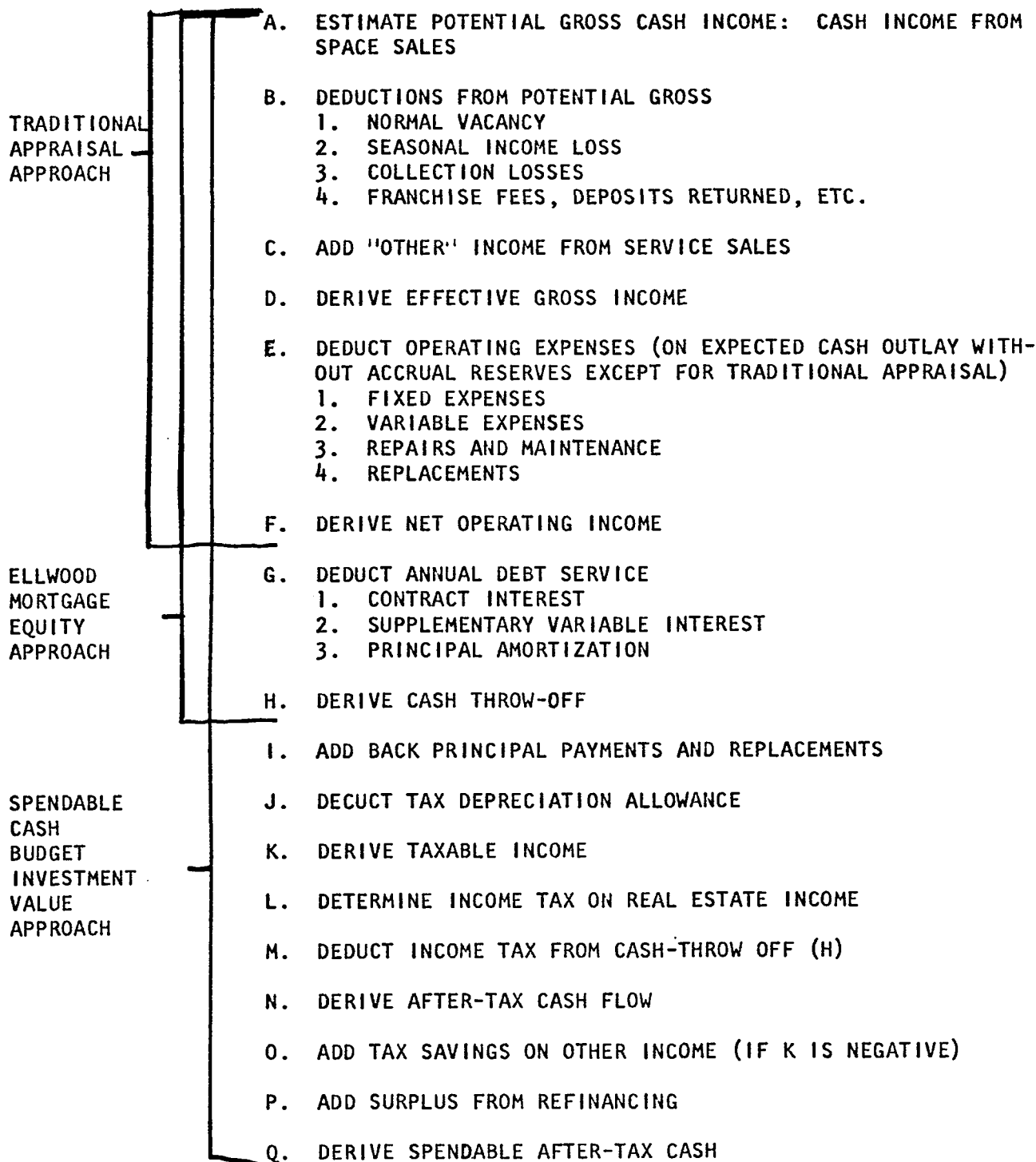
G. Derive After Tax Resale Proceeds to Investor

*Traditional approach would define resale value as salvage value of unencumbered land, thus omitting B–G.
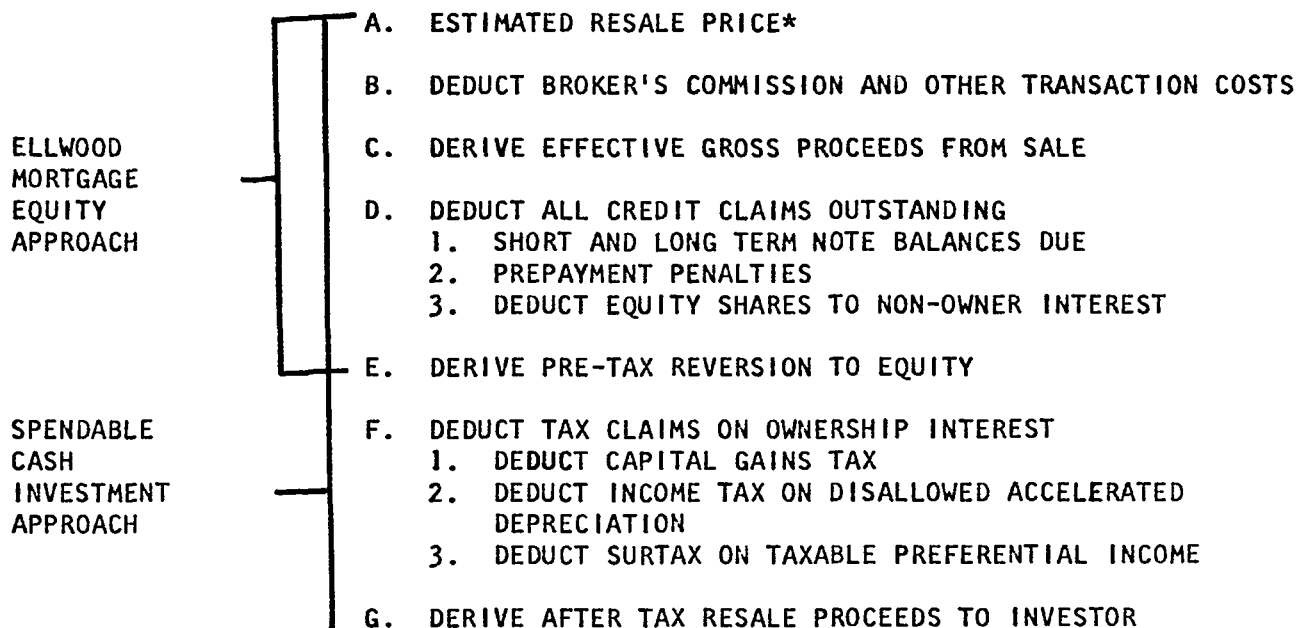
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Chart 1

COMPARISON OF ACCOUNTING DEFINITIONS OF REAL ESTATE INCOME FROM RENTAL PROPERTY FOR THREE PRESENT VALUE VALUATION SYSTEM

PART I.   ANNUAL RETURNS TO INVESTOR

TRADITIONAL APPRAISAL APPROACH

A. ESTIMATE POTENTIAL GROSS CASH INCOME: CASH INCOME FROM SPACE SALES

B. DEDUCTIONS FROM POTENTIAL GROSS
1. NORMAL VACANCY
2. SEASONAL INCOME LOSS
3. COLLECTION LOSSES
4. FRANCHISE FEES, DEPOSITS RETURNED, ETC.

C. ADD "OTHER" INCOME FROM SERVICE SALES

D. DERIVE EFFECTIVE GROSS INCOME

E. DEDUCT OPERATING EXPENSES (ON EXPECTED CASH OUTLAY WITHOUT ACCRUAL RESERVES EXCEPT FOR TRADITIONAL APPRAISAL)
1. FIXED EXPENSES
2. VARIABLE EXPENSES
3. REPAIRS AND MAINTENANCE
4. REPLACEMENTS

F. DERIVE NET OPERATING INCOME

ELLWOOD MORTGAGE EQUITY APPROACH

G. DEDUCT ANNUAL DEBT SERVICE
1. CONTRACT INTEREST
2. SUPPLEMENTARY VARIABLE INTEREST
3. PRINCIPAL AMORTIZATION

H. DERIVE CASH THROW-OFF

SPENDABLE CASH BUDGET INVESTMENT VALUE APPROACH

I. ADD BACK PRINCIPAL PAYMENTS AND REPLACEMENTS

J. DEDUCT TAX DEPRECIATION ALLOWANCE

K. DERIVE TAXABLE INCOME

L. DETERMINE INCOME TAX ON REAL ESTATE INCOME

M. DEDUCT INCOME TAX FROM CASH-THROW OFF (H)

N. DERIVE AFTER-TAX CASH FLOW

O. ADD TAX SAVINGS ON OTHER INCOME (IF K IS NEGATIVE)

P. ADD SURPLUS FROM REFINANCING

Q. DERIVE SPENDABLE AFTER-TAX CASH

As printed in draft of article

PART II. RETURNS TO INVESTOR ON RESALE

A. ESTIMATED RESALE PRICE*

B. DEDUCT BROKER'S COMMISSION AND OTHER TRANSACTION COSTS

ELLWOOD MORTGAGE EQUITY APPROACH

C. DERIVE EFFECTIVE GROSS PROCEEDS FROM SALE

D. DEDUCT ALL CREDIT CLAIMS 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

SPENDABLE CASH INVESTMENT APPROACH

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

* TRADITIONAL APPROACH WOULD DEFINE RESALE VALUE AS SALVAGE VALUE OF UNENCUMBERED LAND, THUS OMITTING B-G

CHART 2. Comparison of Critical Real Estate Investment Valuation Assumptions for Discounting Real Estate Productivity Returns*

Traditional Appraisal

1. Instant investment	1. Instant investment and disinvestment	1. Discontinuous series of outlays
2. Continuous income function	2. Continuous income function	2. Discontinuous series of receipts
3. Productivity limited to annual economic net income from parcel before debt and income tax	3. Productivity limited to average annual cash after debt service but before income tax	3. Productivity is periodic net change in spendable cash from all sources after debt and income tax
4. Simple discounting at arbitrary rate	4. Weighted average discounting of arbitrary equity rate	4. Modified internal rate of return
5. Recapture of capital from income except for land value	5. Recapture of capital from income & resale	5. Payback of equity from spendable after tax cash and debt from net revenue
6. Projected for full useful life of improvements	6. Projected for normal operating period 5-10-15 years for typical investor	6. Projected for elapsed time of outlays and receipts for specific total holding period of investor

*Small variations on theme are oversimplified for purposes of tabular comparison

replaced within the projected period of ownership. While the Ellwood approach moves closer to a cash concept of productivity, it still depends upon instant investment, instant resale proceeds, and income projections as continuous mathematical functions. Chart 2 provides a summary comparison with traditional appraisal methods.

It should be understood that the Ellwood technique is not only intended to improve the relevance of appraisal valuation theory but also is intended to be a system for practical application in the field with the aid of precomputed tables by a number of professional appraisers whose mathematical ability and accounting abilities are no better than any cross section of small businessmen. Real estate decisions have been typically infrequent events related to small enterprises where there is little managerial specialization, and therefore operational techniques need to be easily understood and applied by those making the investment decisions. This constraint of interfacing theory and practice may account for the lag between field methods of valuation and modern capital budgeting theory developed by the upper echelons of banking and corporate staff analysts.

In recent years the scale of real estate enterprise has grown from isolated development of individual sites to the creation of total urban systems more commonly called new towns, shopping centers, planned unit development or industrial–commercial parks. The development process involves increasing capital outlays over development lead time ranging from 3 years for a shopping center up to 15 years for a new town. Both equity and debt capital required limit activity to only the largest corporation with sophisticated accounting and financial specialists. Their multiple profit centers and income tax considerations produce erratic discontinuous streams of receipts. The hidden assumptions of traditional or Ellwood appraisal techniques of instant investment, of continuous income functions, or of productivity limited to that inherent to real estate before the income tax, appear as distortions no longer justified in large part by the need for simplicity. Large sophisticated capital investors are therefore significantly altering current concepts of real estate productivity and valuation.

The fundamental departure of modern capital budgeting from appraisal is related to its emphasis on cash revenue forecasting by periods rather than by projection of a continuous function. Moreover, the traditional real estate assumption of a conventional investment of a single outlay followed by a series of one or more receipts is only a special case of the more general pattern of real estate investment which is a series of outlays followed by or interspersed with a series of receipts. The real estate appraiser is solving his formula by assuming a discount factor for which he has some market evidence to determine the justified outlay which he calls market value or investment value. The capital budget maker attempts to define outlays and receipts in order to solve for the rate of return that would be realized if the schedule were to be accomplished. Typically this rate is the internal rate of return (ROI) modified for cost of capital, which is defined by the capital budgeting people as that rate of interest that will make the future value of the cash proceeds expected from an investment equal to the present value of the cash outlays re-

quired by that investment.[3] Cash outlays are discounted to the beginning of the forecast period at a rate equal to the cost of capital or reinvestment opportunity rate. Cash proceeds are compounded forward to the end of the forecast period at the cost of capital or reinvestment rate. Then it is possible to solve for the internal rate of return which will make the future value of cash proceeds equal to the present value of cash outlays. This technique avoids the problem of solving for the internal rate of a non-conventional investment, that is, one with outlays interspersed with receipts. More significant than the technical problem of computation is the fact that investors typically experience higher returns to equity in real estate than any other investment alternative, so that the reinvestment assumptions of the internal rate of return do not distort the results when outlays and proceeds are modified.

To determine after-tax spendable cash, it is necessary to provide detail on the calendar of financial events, the sources of proceeds and their income tax classification, operating expenses, financial plans for interest and principal advances and payments, and the possible variance in critical assumptions. Determination of outlays and receipts for each period involves extensive computation best performed by computer. As a result, accounting firms, engineering firms, and time-sharing services, as well as institutional investors, have developed a large number of cash flow simulation programs serving various types of real estate investment. The computer terminal, in particular, should solve interfacing problems of theory and practice which delayed widespread adaptation of the Ellwood approach among appraisers.[4]

While capital provided by mortgage loans secures its recapture from net income and resale proceeds, the equity cash required looks to its payback from all sources of spendable cash attributable to participation in the real estate enterprise. Productivity can thus be expanded in concept to include a variety of profit centers inherent in the construction process or operating management of the real estate, as well as the deferral of income taxes or the abatement of operating costs of the owner. Relocation of a manufacturing firm may not only provide economies in occupancy costs for a new building, but may also produce lower marketing, raw material, transportation, and labor-cost savings per unit of production, while increasing income tax deductions and reducing capital investment due to community subsidies to attract new employers. An increase in net spendable cash and a decline in net invested capital thereby produces a higher return on investment capital. The developer may find cash profits from land sales, construction contracts, creation of business opportunities within the development such as retailing sites, and captive markets for his insurance agency and mortgage banking house, not to mention the profiable sale of tax losses and investment management. Such an expanding concept of productivity is looking at a real estate commitment as entree to a consumption

[3] The professional appraisal societies have organized a joint educational program as a separate foundation to accelerate introduction of computer terminals in appraisal offices. More information can be had by writing EDUCARE, School of Business, University of Wisconsin, Madison, Wisconsin 53706.

[4] "How to Assess Investment Proposals," *Harvard Business Review*, Robert H. Baldwin, May–June 1959.

system generating a variety of potential cash flows for the supplier of urban space systems. Each investor may choose to recognize different profit potentials, but the result is that the independent appraiser who does not have access to internal data of the investor cannot predict with accuracy the value of a specific parcel to that investor.

Just as the income stream is undergoing redefinition, so is the assumption of instant reinvestment. Unlike the purchase of a bond, which may involve a cash transfer to the broker within a day or two of the investment commitment, real estate investment involves a series of outlays in the form of earnest money, down payment, construction draws, special improvements for new tenants, and occasional remodeling and deferred maintenance. The actual timing of outlays can be manipulated by the terms of purchase contracts, forms of business organizations such as joint ventures and syndicates, and by terms of real estate credit alternatives. Thus the network of financial events called outlays may be proceeding in part independently of the schedule of anticipated net receipts, although financial solvency obviously requires some correlation between scheduled receipts and scheduled outlays.

Once the valuation system becomes concerned with cash accounting for outlays and receipts, many of the old assumptions for accrual reserves, or average returns on capital, or allocations of streams of revenue between profit and capital recapture, drop out of explicit consideration. Of course, the alternative makes it necessary to detail a whole calendar of specific cash transaction events, to make explicit assumptions as to rates of construction, occupancy, sale, repair and all the other changes which occur in the condition or state of a real estate enterprise system.[5] Immediately, the investor is confronted with the reality that he is making decisions under conditions of uncertainty, uncertainty which cannot be softened by the appraisal assumption of average revenue, implicit sinking funds, and non-existent non-cash reserves. As long ago as 1932, Frederick M. Babcock stated in his classic book *The Valuation of Real Estate*:

> If anticipated income is the basis of valuation, then the valuation process will necessarily include the making of forecasts and predictions. The fact that predictions are difficult to make with accuracy in no way modifies the necessity for making them, and the process of deriving an estimate of present value from a forecast of future income is in no sense to be considered as one of the several alternative methods of valuation.[6]

In short, Babcock advocated the discounting of net return as the only legitimate method of valuation. Several methods have developed among sophisticated investors for dealing with the uncertainty of capital budget projections and assumptions.

Risk in real estate is the variance between expectations and realizations. Such a definition implies that the analyst has a plan which defines his expectation and provides a means of measuring the adequacy of his realization, namely

[5] *Management Dynamics—The New Synthesis*, John A. Beckett, McGraw-Hill, 1971.
[6] *Valuation of Real Estate*, Frederick H. Babcock, McGraw-Hill, 1932.

a budget, a monitoring system with feedback, and specific criteria as to what is included in "net profit." Without that premise, the investor may have much anxiety and doubt but has no means of discussing risk. There is no relationship between rate of return, which is a quantitative computation involving fixed variables, and risk, which is concerned with consequences of variance in those quantities. Instead, risk is a manageable factor which can be controlled through planning and monitoring, shifted by contract, reduced through scale of operations, or avoided through a variety of legal escape routes. A real estate project must be analyzed for its potential variance between realization and expectation by evaluating the degree to which its revenues are assured, its costs have been stabilized by contract and technique, and unforeseen future contingencies can be cushioned with conservative financial planning. Long-term upset may be buffered by early recovery of equity capital, coupled with a limit on investor liability, or prearranged formulas for liquidation. Having determined the variance which could be eliminated by contract and by management, it is then necessary to analyze the significance of possible variance in the variables which remain. To some degree, management control of when the money is spent permits an increase in snow removal cost to be offset by a deferred expenditure for maintenance or improvement so that net flows do not gyrate with every variable in the budget.

After the allowance for co-variance within aggregates of revenue, expenses, and capital costs, there still remains some potential for a positive or negative difference between net cash flow expectations and realizations. One method of measuring the significance of these residual variances is facilitated by computer simulation cash flow models. Several sets of optimistic and pessimistic assumptions are run through the model to establish the range of typical outcomes and yields. The possible outcome of the investment is thus bracketed, and if realization seems reasonable by subjective probability standards the investor will proceed. A number of sophisticated investors have created probability or stochastic cash flow simulation models in which variables are described as a single number with a standard deviation or as a range with a median point. These dimension statements on the range and shape of frequency distribution of key variables can take the form of either normal distributions or Baysian curves skewed to the high or the low side. For example, total construction cost might be described as within $400,000 and $500,000 with the median at $420,000, suggesting the overruns may be more costly than unanticipated savings. The computer constructs an array of 100 or more pro forma cash flow statements by choosing on a random basis the necessary variables from the curves of each frequency distribution suggested by the inputs. The computer then calculates the frequency distribution of the 100 fictional financial statements on matters of net income or rate of return in order to provide a probability statement relative to achievement of certain dollar or ratio decision criteria.

Among the variables which affect yield, the most sensitive factors are total capital cost and its derivative, equity cash required "up front" at the start of the investment. Since that is the case, it can be said that the investor predetermines his rate of return by how well he negotiates the price and terms of

his purchase. For many years to come there will be a great discrepancy among buyers and sellers (or their agents) in their ability to correctly value the present worth of any given property. A significant portion of profits to be made will therefore go to those who understand the requirements of capital investment valuation and the components of risk necessary to apply the present value of money concept to maximum advantage.

Questions

1. Explain the formula $I/OAR = V$.
2. Why is "capital recapture" provided for in real estate investment analysis but not for most other types of investments?
3. Are there basic differences between the Ellwood capitalization procedure and the mortgage equity approach?
4. Comment on the statement: "A real estate project must be analyzed for its potential variance between realization and expectation by evaluating the degree to which its revenues are assured, costs have been stabilized by contract and technique, and unforeseen future contingencies can be cushioned with conservative financial planning."