

EVALUATING CAPITALIZATION RATES

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- ## GOALS OF THE COURSE
- Provide an outline for the review of income driven valuations.
 - Gain an understanding of the roll of stabilization in cash flow modeling.
 - Explore how judgments made in the ctabilization process can affect the resulting cap rate.
 - Explore the components of cap rates
 - Explore the use of cap rates for purposes *other* than valuation.

- ## STANDARD RULES
- Law limits the power of taxation, and over time standard rules and techniques have been developed to apply in valuation.
 - MARKET VALUE IS A STANDARD MEASURE
 - Condemnation
 - Taxation
 - INCOME CAPITALIZATION IS A STANDARD METHOD

Market Value Definition

“the value that would be fixed in fair negotiations between a desirous buyer and a willing seller, neither under any undue compulsion to make a deal.”

(Internal quotations and citations omitted.)

Carol Management Corp. v. Greenwich, 228 Conn. 23, 34 (1993).

PROPERTY INTEREST

➤ Generally, we identify the interest in real estate that is to be valued.

- Fee Simple Interest
- Leased Fee Interest

Property can be sold free and clear of the interests of others, or subject to those interests, such as in a lease.

Income Approach

➤ Capitalization in Appraisal and Assessment involves the conversion of expected income into the value of real estate by a mathematical process.

2 TECHNIQUES

1. Direct Capitalization
2. Yield Capitalization

Direct Capitalization

- A method used to convert an estimate of a single year's income expectancy into an indication of value in one direct step, either by dividing the income estimate by an appropriate rate or by multiplying the income estimate by an appropriate factor. Direct capitalization employs capitalization rates and multipliers extracted or developed from market data. Only a single year's income is used. Yield and value change are implied, but not identified.

The Dictionary of Real Estate Appraisal, Fifth Edition, 2010, Appraisal Institute

Capitalization Rate

- Any rate used to convert income into value.

Direct Cap uses an Overall Capitalization Rate

- An income rate for a total real property interest that reflects the relationship between a single year's net operating income expectancy and the total property price of value ($R_o = I_o / V_o$).

The Dictionary of Real Estate Appraisal, Fifth Edition, 2010, Appraisal Institute

Yield Capitalization

- The capitalization method used to convert future benefits into present value by
 - 1) discounting each future benefit at an appropriate yield rate, or
 - 2) by developing an overall rate that explicitly reflects the investment's income pattern, holding period, value change, and yield rate.

The Dictionary of Real Estate Appraisal, Fifth Edition, 2010, Appraisal Institute

Yield Rate

➤ A rate of return on capital, usually expressed as a compound annual percentage rate. A yield rate considers all expected property benefits, including the proceeds from sale at the termination of the investment.

Discount Rate

➤ A yield rate used to convert future payments or receipts into present value; usually considered to be a synonym for **yield rate**.

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DIRECT vs. YIELD CAP

Direct Capitalization and Yield Capitalization are both forms of Income Capitalization

But we use different words to distinguish the type of rate

R_o is called a Capitalization or "Cap" Rate

Y_o is called a Discount Rate

DIRECT vs. YIELD CAP

Change is a given principle of appraisal

Direct Cap employs the symbol R_o
This is the overall capitalization rate

Yield Capitalization employs the symbol Y_o
This is the overall yield rate

DIRECT vs. YIELD CAP

There is one more useful relationship

Whether implicit (R_o), or explicit (Y_o), the same change assumption pertains to Direct and Yield Cap analysis.

In a perfectly balanced analysis, Direct Cap and Yield Cap will indicate the same value.

Value Doesn't Care which method is used

INCOME APPROACH

- WE WILL CONCENTRATE ON DIRECT CAP IN THIS SEMINAR BECAUSE
- Direct Cap Rates can be extracted from property sale prices
- Yield rates incorporate expectations of future changes. Buyers can tell us what they expect to happen to their investment, but we cannot extract this expectation directly from a price.

DIRECT vs. YIELD CAP

Market value is the present worth of future benefits

This means that both Direct Cap and Yield Cap are forward looking techniques

Change is a given principle, and both techniques incorporate the expectation of future change from present market conditions

DIRECT vs. YIELD CAP

- We examine Yield Cap because it can help us understand direct cap better.
- Investment is forward looking, and yield cap makes the expectations of investors explicit and the impact of expected changes on value is sometimes a little easier to understand.
- These expectations are implicit in direct cap rates, but because they are "hidden" or baked into the rate, expectations of change are harder to observe.

CASH FLOW MODELS

Models the flow of revenue as income and the expenses charged to it.

Models can be simple or complex, depending on the property and its lease structure.

$$\text{Income} - \text{Expenses} = \text{Net Income}$$

We call the result Net Operating Income, or NOI

Net Operating Income (NOI)

- *The actual or anticipated net income that remains after all operating expenses are deducted from effective gross income but before mortgage debt service and book depreciation are deducted.*

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CASH FLOW MODELS

- Income and expenses are forecast for future time periods
- Past performance is investigated as a predictor of future performance
- Expected changes are incorporated

CASH FLOW MODELS

Income: Future performance is modeled on

- Contracted income (lease terms)
- Tenant Creditworthiness
- Market Rents
- Trends of change in market rents
- Vacancy rates

CASH FLOW MODELS

Expenses: Future performance is modeled on

- Real estate taxes and insurance
- Previous patterns of utility consumption
- Repair and maintenance requirements
- Management and administration costs
- Costs to maintain occupancy (lease & fit-up costs)
- Tax compliance costs
- Replacement costs

CASH FLOW MODELS

Goal of cash flow modeling is to model a "typical" year.

- Changes from previous performance should reflect a reasonable expectation
- Transient increases or decreases in previous income and expenses are identified and eliminated so that they don't skew the estimate of NOI
- Future changes in operating expenses will reflect inflation and expected changes in occupancy
- Once completed, we use the terms "reconstructed" and/or "stabilized" to describe the cash flow model

CASH FLOW MODELS

- Where the leased fee interest is valued, expected income will reflect contract terms, which may or may not be at market terms
- Where the fee simple interest is valued, expected income will reflect market terms

CASH FLOW MODELS

Two principal types

Single year: Capitalized in a single calculation

Multi year: Capitalized by multiple calculations

Yield Capitalization

- Yield Capitalization treats changes in income, risk and value explicitly. The extent to which change is expected to occur is quantified.

DCF

- Capitalization by the summation of the present value of a series of periodic net cash flows. This is called “Discounted Cash Flow” or DCF analysis.

Discounted Cash Flow

- *The procedure in which a discount rate is applied to a set of projected income streams and a reversion. The analyst specifies the quantity, variability, timing, and duration of the income streams as well as the quantity and timing of the reversion and discounts each to its present value at a specified yield rate.*

[The Dictionary of Real Estate Appraisal](#), Fifth Edition, 2010, Appraisal Institute

SINGLE YEAR CASH FLOW

- Some Source Documents:
 - Income & Expense Statement (I&E)
 - Profit & Loss Statement (P&L)
 - General Ledger (list of all transactions)
 - Schedule C (1065 Tax Return)
- Each has strengths and weaknesses as a data source.
- Data from these sources is considered and transient highs and lows that are not typical of ordinary operations are either adjusted over time or are eliminated. Income and expenses that are not valid are eliminated. This is the process of stabilization. The result is a reconstructed or “stabilized” cash flow model of the property.

SINGLE YEAR CASH FLOW

Cash Flow Models are algorithmic: they consist of a series of inputs, relationships among the inputs, and a result. The result of a single year cash flow model is the Net Operating Income of the property we label this

NOI

What an investor is actually buying in a property transaction is the future NOI of the property, and normally, that NOI is a specific amount at the time of purchase. If we divide the current NOI by the sale price, we derive a ratio of income to price. This is an overall *Capitalization Rate*. We label this

R_o

If the transaction conforms to the tests of market value *and the NOI is not distorted* by non-market income or extraordinary operating costs or savings, we accept the price as the *market value*, and the rate derived as a *market cap rate*.

IRV

- The three components are Income, Rate and Value: IRV
- To derive Income: $I = R * V$
- To derive a Rate: $R = I \div V$ (this is called a Capitalization Rate or R_o)
- To derive a Value: $V = I \div R$

Overall Cap Rates

- Ratio of income to value.
 - (By convention we use 1 year's income)
- Expression of time
 - (How many years to recovery of investment)
- Measure of risk & uncertainty
 - (Greater return for greater risk)

CASH FLOW: Excel Sample

- Excel Sample of single year cash flow
- Inputs for
 - Rent(s) by tenant
 - Sum = Potential Gross Income (PGI)
 - Vacancy Expectation
 - Deduct from PGI = Effective Gross Income (EGI)
 - Expenses- grouped by category
 - Deduct from EGI – Net Operating Income (NOI)
- This Excel model is used to explore the effects of distorted NOI on extracted cap rates.

Refer to Excel Model 1

MODEL NAME

Extraction of Cap Rate from Sale Price

COMPONENTS OF CAP RATES

- The result of $I=R*V$ is a composite number
- The Overall Capitalization rate is an aggregate rate
- Capitalization rates can be disaggregated

COMPONENTS OF CAP RATES

- Physical disaggregation:
Land Cap Rate + Building Cap Rate
- Property Interest Disaggregation:
Leasehold Cap Rate + Leased fee Cap Rate
- Financial Interest Disaggregation:
Mortgage Cap Rate + Equity Cap Rate
- Private vs. Public Interest Disaggregation:
Base Cap Rate + Effective Tax Rate

FINANCIAL DISAGGREGATION

- We are going to “pick apart” the cap rate.
 - We research the mortgage and determine the dollar amount of the debt service (DS).
 - We deduct the debt service from NOI to determine the cash flow (the “Equity Dividend”)

$$\text{NOI} - \text{DS} = \text{ED}$$

WHY?

- Frequently there is not enough current cap rate data in the local market. Sometimes none at all.
- We need other data sources
 - Similar properties in neighboring markets
 - Published survey data
 - RERC, PwC, Realty Rates, CoStar, REIS
 - Build our own (this is where R_e is used)

COMPONENTS OF CAP RATES

An Aggregate rate can be “Built-Up”

Band of Investment is the most commonly used

BAND ANALYSIS

- Can be applied to components of rate
- Can be applied to components of income

BAND ANALYSIS

Application to Components of rate:
Standard Band of Investment Analysis

SOURCE OF CAPITAL	PORTION	CASH FLOW	
		RATE	WEIGHTED AVERAGE
Mortgage Component:	70%	0.093036	0.065125
Equity Component:	30%	0.100000	0.030000
Overall Capitalization Rate			0.095125

Applied to NOI

Elements of the Band

- The Loan to Value Ratio, designated **LVR**
 - This is the proportion of the sale price that a lender is willing to loan.
 - Lenders want assurance they will be repaid, and they commonly reduce the risk of default by loaning less than the full value of the property.

Elements of the Band

Mortgage Constant

R_m

- For those familiar with the 6 functions of the dollar- the mortgage constant is the sixth function. It is the **level periodic payment** required to retire a debt over a specific term at a compound rate of interest.
- The Mortgage Constant is the annualized amount to retire one dollar of principal over the term of a loan at a specific interest rate, paid at specific intervals. Because it pertains to a single dollar it can be used as a multiplier to determine the payment for any principal amount.

The 6 Functions of a Dollar

- **6)** The level periodic payment required to retire a debt over a specific term at a compound rate of interest.

Mortgage Constant

- If I borrow \$100 at a 10% rate of interest for a ten year period, what is the payment if I am required to pay monthly?

Elements of the Band

Equity Dividend

R_e

- > We discussed the extraction of the equity dividend (or "cash on cash" that can be extracted from sales data: the formula was

$$\text{NOI} - \text{Debt Service} = \text{Equity Dividend}$$

- > This is the cash received by the property owner annually.
- > When the annual dividend is divided by the down payment made by the property owner, the result is the equity dividend rate, or R_e .

$$\text{Equity Dividend} \div (\text{Price} - \text{Mortgage}) = R_e$$

Typical Band Analysis: R_o

- > We know the following:
 - The Loan To Value Ratio (LVR)
 - The Mortgage Constant (R_m)
 - The Equity Dividend Rate (R_e)

- > We Want to Calculate the Overall Cap Rate (R_o)
(the arrows are the calculation path)

SOURCE OF CAPITAL	CASH FLOW		WEIGHTED AVERAGE
	PORTION	RATE	
Mortgage Component:	70%	0.093036	0.065125
Equity Component:	30%	0.100000	0.030000
Overall Capitalization Rate			0.095125

Refer to Excel Model 2

MODEL NAME

Capitalization By Built-Up Rate

Alternate Calculation Path: R_e

- > We know the following:
 - The Loan To Value Ratio (LVR)
 - The Mortgage Constant (R_m)
 - The Overall Cap Rate (R_c)
- > We Want to Calculate the Equity Dividend Rate (R_e)
(the arrows are the calculation path)

SOURCE OF CAPITAL	PORTION	CASH FLOW RATE	WEIGHTED AVERAGE
Mortgage Component:	70%	0.093036 →	↓ 0.065125
Equity Component:	30% →	0.100000 *	↑ 0.030000
Overall Capitalization Rate			# 0.095125

Refer to Excel Model 3

MODEL NAME

Extraction of Equity Dividend Rate

LEVERAGE

- > Mortgage lending gives real estate liquidity. If everyone who wanted to buy real estate had to pay all cash, then few people could buy and it would take a long time to sell property. The market, and our built environment would look very different without it.
- > Mortgage financing splits NOI into two risk tranches; a debt service portion and an equity dividend portion. The relative proportion of each "slice" would be the same as the loan to value ratio if the risk return to each slice was the same, but the risks are different.

LEVERAGE

- The Mortgage tranche or “slice” of NOI has a contractual priority of payment over the equity dividend.
- The Equity Dividend is more exposed to a decline in rental income.
- Both the lender and the buyer have made an investment in the income property.
- The higher risk equity position demands a higher relative rate of return.

LEVERAGE

- While the risk of default is greater for the equity position than the mortgage position, the equity position has an advantage: the return to the mortgage is fixed (at least within certain parameters in a variable rate mortgage).
- If rental income increases, all of the net benefit flows to equity. The potential for gain is greater for equity, even though it is the smaller “slice”.

This is **LEVERAGE**

LEVERAGE

- Outsized gains resulting from leveraged investments attract investors.
- The gains can come from increased rents, increased operating efficiency, from property appreciation, and from falling interest rates.

But Leverage can work both ways

LEVERAGE

- Consider trends in interest rates for the past 7+ years
- The Fed set interest rates low during this period and this drove interest rates down to historic lows.
- Low interest rates compressed cap rates and real estate values increased, in some cases values increased where there was no accompanying increase in net income.

LEVERAGE

- The Fed raised its benchmark Federal Funds rate by $\frac{1}{4}$ point in late 2015, another in December 2016 and a third in March 2017. That's a cumulative increase of $\frac{3}{4}\%$, a small number, but the net increase in the interest rate itself is large.
- The Fed has signaled further increases through 2018 totaling another 1.25%.
- Cap rates will likely increase in response to rising interest rates.
