



Chapter 8

Valuation Using the Income Approach

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The Income Approach to Appraisal

- Rationale:
 - Value of a property is the present value of its anticipated income.
- Often called “income capitalization”
 - *Capitalize*: to convert future income into a present value

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Two Approaches to Income Valuation

1. Direct capitalization (with an “overall” rate)
2. Discount all future cash flows at required yield (discount rate)

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Two Approaches to Income Valuation

1. Direct capitalization (with an “overall” rate)
 - Find value as a multiple of first year net income (NOI)
 - “Multiplier” is obtained from sales of comparable properties
 - Similar in spirit to valuing a stock using price/earnings multiple

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Two Approaches to Income Valuation

2. Discounted cash flow (DCF)
 - Project net cash flows for a standard holding period (say, 10 years).
 - Discount all future CFs at required yield (discount rate)

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How Does DCF Differ from Direct Cap?

- DCF models require:
 1. an estimate of the expected holding period of the typical buyer
 2. estimates of net cash flows over the entire expected holding period, including the net income from sale
 3. the appraiser to select the appropriate yield (required IRR) at which to discount all future cash flows.

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Estimating Net Operating Income

	<i>PGI</i>	Potential gross income
-	<i>VC</i>	Vacancy & collection loss
+	<i>MI</i>	Miscellaneous income
=	<i>EGI</i>	Effective gross income
-	<i>OE</i>	Operating expenses
-	<i>CAPX</i>	Capital expenditures*
=	<i>NOI</i>	Net operating income

*Traditionally, appraisers have included in their estimates of *NOI* a "reserve for replacement" of capital items. However, in the real estate investment community, expected capital expenditures are increasingly referred to in cash flow forecasts as "capital expenditures" or "capital costs." To be consistent with the current treatment in the investment community, and to avoid changing terminology as we progress through the text, we will refer to these anticipated expenses as capital expenditures or "CAPX."

Sometimes referred to as a "reconstructed" operating statement

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Example: Centre Point Office Building

- Property consists of 9 office suites, 4 on the first floor and 5 on the second.
- Contract rents: 6 suites at \$1,800 per month and 3 at \$1,400 per month.
- Annual market rent increases: 3% per year
- Vacancy and collection losses: 10% per year
- Operating expenses: 40% of effective gross income each year
- Capital expenditures: 5% of effective gross income each year
- Expected holding period: 5 years

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Potential Gross Income (*PGI*)

- Potential gross income: Rental income assuming 100% occupancy
- Important issue: Contract rent or market rent?

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Potential Gross Income: Centre Point

First Floor	
1,000 sq. ft. suites – 4 × \$1,800 × 12 mos.	= \$86,400
Second Floor	
800 sq. ft. suites – 2 × \$1,800 × 12 mos.	= \$43,200
800 sq. ft. suites – 3 × \$1,400 × 12 mos.	= \$50,400
	<u>= \$93,600</u>
Potential Gross Income	= (\$86,400 + \$93,600)
	= \$180,000

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Using Rent Comparables to Estimate Rental Rate (Exhibit 8-3)

■ Example: Survey of rental rates for second-floor offices in Centre Point:

	Comparable			Average
	1	2	3	
Rent per month	\$1,620	\$1,540	\$1,680	
Sq. ft. per unit	790	810	900	833
Rent per sq. ft. per month	\$ 2.05	\$ 1.90	\$ 1.87	\$1.94

Implications: 2nd floor rents average \$1.95, consistent with mkt rates

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Types of Commercial Leases

- Straight lease: "Level" lease payments
- Step-up or graduated lease: Rent increases on a predetermined schedule
- Indexed lease: Rent tied to an inflation index: Consumer Price Index, Union wage index, etc.
- Percentage lease: Rent includes percentage of tenant's sales

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Effective Gross Income

- VC-vacancy & collection loss is based on:
 - Historical experience of subject property
 - Competing properties in the market
 - “Natural vacancy” rate:
 - Vacancy rate that is expected in a stable or equilibrium market

	PGI	Potential Gross Income
-	VC	Vacancy & Collection Loss
+	MI	Miscellaneous Income
=	EGI	Effective Gross Income
-	OE	Operating Expenses
-	CAPX	Capital Expenditures
=	NOI	Net Operating Income

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Effective Gross Income

- Miscellaneous income
 - Garage rentals & parking fees
 - Laundry & vending machines
 - Clubhouse rentals

	PGI	Potential Gross Income
-	VC	Vacancy & Collection Loss
+	MI	Miscellaneous Income
=	EGI	Effective Gross Income
-	OE	Operating Expenses
-	CAPX	Capital Expenditures
=	NOI	Net Operating Income

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Centre Point Effective Gross Income

Potential gross income (PGI)	\$180,000
- Vacancy & collection loss (VC)	18,000 (@10%)
+ Miscellaneous income (MI)	0
= Effective gross income (EGI)	\$162,000

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Operating Expenses

- *Operating Expenses:*
 - Ordinary & regular expenditures necessary to keep a property functioning competitively.
 - *Fixed:* Expenses that do not vary with occupancy.
 - insurance,
 - property taxes
 - *Variable:* Expenses that vary with occupancy.
 - Utilities
 - Maintenance & supplies
 - Trash and garbage removal

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Operating Expenses

- Do not include:
 - Mortgage payments
 - Tax depreciation
 - Capital expenditures

	PGI	Potential Gross Income
-	VC	Vacancy & Collection Loss
+	MI	Miscellaneous Income
=	EGI	Effective Gross Income
-	OE	Operating Expenses
-	CAPX	Capital Expenditures
=	NOI	Net Operating Income

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Capital Expenditures (CAPX)

- *CAPX:* Expenditures that materially increase value of structure or prolong its life:
 - Roof replacement
 - Additions
 - HVAC Replacement
 - Resurfacing of parking areas
 - Tenant improvements

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Special Problem in Income Property Analysis: CAPX

Most appraisers treat CAPX as "above line" expense (see Exhibit 8-4).

Institutional investors usually treat CAPX as "below line" expense.

Above Line	
	EGI
	- OE
	- CAPX
	= NOI
Below Line	
	EGI
	- OE
	= NOI
	- CAPX
	= Net Cash Flow

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Reconstructed Operating Statement:

		Stabilized Annual Income
Potential gross income (PGI)		\$180,000
Less: Vacancy and collection losses (VC)		18,000
Effective gross income (EGI)		162,000
Less: Operating expenses (OE)		
Fixed expenses		
Real estate taxes	\$15,900	
Insurance	9,200	\$25,100
Variable expenses		
Utilities	\$12,800	
Garbage collection	1,000	
Supplies	3,000	
Repairs	5,200	
Maintenance	10,500	
Management	7,200	\$39,700
Total operating expenses		\$ 64,800
Less: Reserves for leasing and capital expenditures		
Roof and other exterior expenditures	\$ 2,800	
Tenant improvements	3,200	
Leasing commissions	2,100	8,100
Total reserves for capital expenditures		8,100
Net operating income (NOI)		\$ 89,100

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Some Sources of Industry Expense Data

- Institute of Real Estate Management (IREM): www.irem.org
 - Detailed information on apartments, offices, shopping centers, federally assisted housing and condominiums, co-ops and planned communities.
- Building Owners and Managers Association (BOMA): www.boma.org
 - Large office buildings

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Some Sources of Industry Expense Data

- International Council of Shopping Centers (ICSC): www.icsc.org
- Urban Land Institute (ULI): www.uli.org
- Local market participants
- Other pro formas you have seen

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Net Operating Income

- NOI is property's "dividend"
 - Why is it not investor's dividend?
- Projected stream of NOI is fundamental determinant of value
- NOI must be sufficient to
 - service the mtg debt and
 - provide equity investor acceptable
- Be careful of

	with an
	return on equity
PGI	Potential Gross Income
- VC	Vacancy & Collection Loss
+ MI	Miscellaneous Income
= EGI	Effective Gross Income
- OE	Operating Expenses
- CAPX	Capital Expenditures
= NOI	Net Operating Income

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First Income Valuation Method: Direct Capitalization

Basic value equation:
$$V = \frac{NOI_1}{R_o}$$

Warning!!!!!!!
 R_o is a "cap" rate
 R_o is NOT a discount rate!!!!

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Steps in Direct Capitalization

1. Obtain estimates of cap rates, R_o , from the market using the “direct market extraction” equation:

$$R_o = \frac{NOI_1}{\text{Selling Price}}$$

From a comparable property

2. Divide the subject's NOI_1 by a weighted average of the abstracted R_o s to obtain an estimate of value for the subject

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Direct Capitalization for Centre Point Case

Step 1: Extract R_o from the market.

Comparable	First-year NOI	Sale Price	R_o	Price ÷ NOI
A	\$80,000	÷ \$ 825,000	= 0.097	10.3
B	114,000	÷ 1,200,000	= 0.095	10.5
C	100,000	÷ 971,000	= 0.103	9.7
D	72,000	÷ 713,000	= 0.101	9.9
E	90,000	÷ 910,000	= 0.099	10.1
Average			= 0.099	10.1

Note: We have assumed each is equally comparable to subject
From where do you obtain comparable NOIs and sales prices?

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Direct Capitalization for Centre Point Case

2. Compute estimated market value, using first year NOI:

$$\text{Value} = \frac{\$89,100}{0.099} = \$900,000$$

$$\text{Value} = \$89,100 \times 10.1 = \$900,000$$

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Other Sources of Cap Rates

- Real Estate Research Corporation's *Real Estate Report*: www.rerc.com
- RealtyRates.com: www.realtyrates.com
- Grubb & Ellis: www.grubb-ellis.com
- Legg-Mason Real Estate Services: www.lmres.com
- CoStar (www.costar.com)
- Other appraisers & market participants

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Important Points About Cap Rates

- R_o : Overall rate of capitalization, or “going-in” cap rate.
- R_o : A ratio of initial cash flow to value
 - Future cash flows and changes in asset value also are important
- Not a yield/discount rate.

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Important Points About Cap Rates

- Direct capitalization only uses first year NOI, but R_o reflects all future cash flows:
 - Transaction prices of the comparables reflect the value of future cash flows.
 - In turn, the cap rates extracted from these purchases do so as well.

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Understanding Cap Rates

- Assume the following first-year cash flows for Centre Point:
 - Purchase price: \$900,000
 - NOI: \$89,100
 - Sale Price at the end of year 1: \$916,650
 - Costs of sale: \$0.00

$$\text{Going-in IRR} = \frac{89,100 + 16,650}{900,000} = 11.75\%$$

$$= \frac{89,100}{900,000} + \frac{16,650}{900,000}$$

$$= 0.099 + 0.0185$$

= cap rate + appreciation rate

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Effect of Appreciation on Cap Rate: Example of Centre Point

- Suppose required one-year IRR is 11.75%
- Suppose income growth results in a sale price at end of year 1 of \$930,000.

What is the resulting cap rate?

- Total year 1 cash flows:
\$89,100 + 930,000 = \$1,019,100
- PV @ 11.75% discount = \$911,946
- Resulting cap rate = 89,100 ÷ 911,946 = 9.77%

Conclusion: With required yield constant, more appreciation implies lower cap rate

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Effective Gross Income Multiplier

- EGIM = Sale price ÷ Effective gross income
- Quick indicator of value for smaller rental properties
- Requires no operating expense information
- Critical assumptions
 - Roughly equal operating expense percentages across properties
 - Assumes market rents are paid
- Best used for properties with short-term leases (apartments & rental houses)

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Effective Gross Rent Multiplier Example

	Comparable		
	A	B	C
Recent sale price	\$876,400	\$986,900	\$776,300
Effective gross income (EGI)	\$158,200	\$175,300	\$143,500
EGIM (sale price ÷ EGI)	5.54	5.63	5.41
	Average EGIM = 5.53		

$$\begin{aligned} \text{Indicated value of subject} &= 5.53 \times \text{EGI} \\ &= 5.53 \times 162,000 \\ &= 895,860, \text{ or } \$896,000 \end{aligned}$$

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Problems with Valuation by Direct Capitalization

- Inadequate data on comparable sales due to:
 - Above- or below-market leases
 - Differing length of leases and rent escalations
 - Differing distributions of operating expenses between landlord and tenant
- Differing prices between institutional and private investors for similar properties
- Result: Discounted cash flow (DCF) analysis can be preferable

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DCF Example: Centre Point

Year	1	2	3	4	5
Potential gross income (PGI)	\$180,000	\$185,400	\$190,962	\$196,691	\$202,592
- Vacancy & collection loss (VC)	18,000	18,540	19,096	19,669	20,259
= Effective gross income (EGI)	162,000	166,860	171,866	177,022	182,332*
- Operating expenses (OE)	64,800	66,744	68,746	70,809	72,933
- Capital expenditures (CAPX)	8,100	8,343	8,593	8,851	9,117*
= Net operating income (NOI)	\$89,100	\$91,773	\$94,526*	\$97,362	\$100,283*

*Subtraction discrepancy due to rounding.

$$\text{Sale price at end of Year 5} = \text{NOI}_5 \div R_t = \$103,291 / 0.100 = \$1,033,000$$

Where R_t is a terminal or "going-out" cap rate, slightly higher than R_o .

$$\begin{aligned} \text{Sale price (SP)} &= \$1,033,000 \\ - \text{Selling expenses (SE)} &= 58,300 \\ = \text{Net sale proceeds (NSP)} &= \$974,700 \end{aligned}$$

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Valuation of the Unlevered Cash Flows: Centre Point

Year	NOI	Net Sale Proceeds	Total Cash Flow	Present Value 11.75%
1	\$ 89,100		\$ 89,100	\$ 79,732
2	91,773		91,733	73,489
3	94,526		94,526	67,734
4	97,362		97,362	62,431
5	100,283	\$974,700	1,074,983	\$616,827
				Present value = \$900,181

Discount rate presumed to reflect required yield in market for unlevered investments of similar risk

For surveys of unlevered yields, see RERC www.rerc.com

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Reconciliation of Value Indicators

Approach	Indicated V_D	Weight (%)	Weighted V_D
Indicated values from income approach			
DCF analysis (NOI)	\$900,000	60%	\$540,000
Direct capitalization	910,000	30	273,000
EGM analysis	896,000	5	44,800
Indicated value from cost approach			
	855,000	5	42,750
Indicated value from sales comparison approach			
	Not applied	0	0
Weighted V_D added to yield final estimate of value:			\$900,550
Rounded to:			\$900,000

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So...What's Better?

- Is direct capitalization using R_o superior to valuation by DCF?
 - Fewer **explicit** assumptions and forecasts are required
 - What **implicit** assumption are you making?

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Work of Appraiser Requires Analytical AND People Skills



Develop network of data contacts



Collect, read, interpret, and organize data and reports



Be skilled in data analysis and report production



Fight time deadlines

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Appendix: Other Methods of Estimating Cap Rates

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Alternate Methods of Estimating Cap Rates: Mortgage-Equity Rate

- Problem: Cannot estimate cap rates without actual sales
- Solution 1: Since income-producing real estate has both equity and debt financing, think of the cap rate as a weighted average of equity cap rate and mortgage cap rate
- Equity cash flow = NOI – Debt service
= Before tax cash flow
= *BTCF*
- Loan cash flow = Monthly payment × 12

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Mortgage-Equity Rate (continued)

- Equity = Purchase price – Loan
- Equity cap rate = $BTCF \div \text{Equity}$
= R_e (equity dividend rate)
- Loan cap rate = Loan cash flow \div loan
= R_m (Loan constant)
- Loan-to-value ratio = Loan amount \div Price
= m (Mortgage-equity cap rate)
= $m \times R_m + (1-m) \times R_e$

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Mortgage-Equity Cap Rate: Example

- Equity dividend rate (from market) = 11.5%
- Typical mortgage loan cap rate = 8.89%
- Typical loan-to-value ratio = 70%
- Mortgage-equity cap rate:

$$R = .70 \times 8.89 + (1 - .70) \times 11.5$$
$$= 0.967, \text{ or } 9.67\%$$

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Constant Growth Cap Rate

- Recall one-year total yield example:
Total yield = Cap rate + Appreciation rate
=> Cap rate = Total yield – Appreciation rate
- Assume required total yield is 11.75%
- Assume expected appreciation rate of 2.0%
=> cap rate = $11.75 - 2.0$
= 9.75%

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Selecting Among Different Cap Rate Estimates

- Direct extraction is preferred, but needs three or more comparables with good information
- Choice ultimately depends on quality of data available for each type of estimate
- Reconciliation made by weighting

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End of Chapter 8

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