Chapter 8

Valuation Using the Income Approach

How much would you pay **today** for . . .
- One hundred dollars paid with certainty each year for five years, starting one year from now.
- Why would you pay less than $500
- One hundred dollars paid with some likelihood each year for five years, starting one year from now.
- As the likelihood of the payment decreases, how does that determine how much you would pay.

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

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 (Gordon DDM model)

2. Discount all future cash flows at required yield (discount rate) **[The DCF Approach]**

Gordon DDM model

\[
P_0 = \frac{D_0 (1 + g)}{r - g} = \frac{D_1}{r - g}
\]
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).
   - Similar to capital budgeting in Finance.

DCF Approach

\[ PV = \sum_{t=1}^{T} \frac{\text{CashFlow}_t}{(1 + r)^t} \]

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.

Estimating Net Operating Income

<table>
<thead>
<tr>
<th>PGI</th>
<th>Potential gross income</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC</td>
<td>Vacancy &amp; collection loss</td>
</tr>
<tr>
<td>MI</td>
<td>Miscellaneous income</td>
</tr>
<tr>
<td>EGI</td>
<td>Effective gross income</td>
</tr>
<tr>
<td>OPEX</td>
<td>Operating expenses</td>
</tr>
<tr>
<td>CAPX</td>
<td>Capital expenditures*</td>
</tr>
<tr>
<td>NOV</td>
<td>Net operating income</td>
</tr>
</tbody>
</table>

*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 confusing 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.

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

Potential Gross Income (PGI)

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

First Floor
1,000 sq. ft. suites – 4 x $1,800 x 12 mos. = $86,400

Second Floor
800 sq. ft. suites – 2 x $1,800 x 12 mos. = $43,200
800 sq. ft. suites – 3 x $1,400 x 12 mos. = $50,400
Potential Gross Income = ($86,400 + $50,400) = $136,800

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

<table>
<thead>
<tr>
<th>Comparable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent per month</td>
<td>$1,620</td>
<td>$1,540</td>
<td>$1,680</td>
<td>$1,610</td>
</tr>
<tr>
<td>Sq. ft. per unit</td>
<td>790</td>
<td>810</td>
<td>900</td>
<td>830</td>
</tr>
<tr>
<td>Rent per sq. ft. per month</td>
<td>$2.05</td>
<td>$1.90</td>
<td>$1.87</td>
<td>$1.94</td>
</tr>
</tbody>
</table>

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

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

Effective Gross Income

- VC - Vacancy & Collection loss is based on:
  - Historical experience of subject property
  - Competing properties in the market

Effective Gross Income

- Miscellaneous income

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
Operating Expenses

- **Operating Expenses**: Ordinary & regular expenditures necessary to keep a property functioning competitively.
  - **Fixed**
  - **Variable**

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Operating Expenses

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

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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.

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Reconstructed Operating Statement:

- **Stabilized Annual Income**
  - Potential gross income (PGI): $100,000
  - Less: Vacancy and collection losses (VC): 1,000
  - Effective gross income (EGI): $99,000

- Fixed expenses:
  - Real estate taxes: $15,900
  - Insurance: 5,200
  - Utilities: 12,800
  - Garbage collection: 3,000
  - Supplies: 3,000
  - Repairs: 3,200
  - Maintenance: 16,500
  - Management: 7,200

- Total operating expenses: $ 64,800

- Less: Interest (see stabilization and capital expenditures):
  - Roof and other exterior expenditures: 2,800
  - Tenant improvements: 2,800
  - Leasing commissions: 3,000

- Total expenses for capital expenditures: $ 8,300

- Net operating income (NOI): $ 91,700

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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
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

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
  - provide equity investor with an acceptable return on equity
- Be careful of NOI vs. NCF

First Income Valuation Method:
Direct Capitalization

Basic value equation:

\[ V = \frac{NOI}{R_o} \]

Warning!!!!!!

\( R_o \) is a “cap” rate
\( R_o \) is NOT a discount rate!!!

Compare to Gordon Model

\[ p_o = \frac{D_o (1 + g)}{r - g} \]

Steps in Direct Capitalization

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

\[ R_o = \frac{NOI}{Selling \, Price} \]

2. Divide the subject’s NOI, by a weighted average of the abstracted \( R_o \)s to obtain an estimate of value for the subject

Direct Capitalization for Centre Point Case

Step 1: Extract \( R_o \) from the market.

<table>
<thead>
<tr>
<th>Comparable</th>
<th>First-year NOI</th>
<th>Sale Price</th>
<th>( R_o )</th>
<th>Price - NOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80,000</td>
<td>825,000</td>
<td>0.097</td>
<td>10.3</td>
</tr>
<tr>
<td>B</td>
<td>114,000</td>
<td>1,200,000</td>
<td>0.095</td>
<td>10.5</td>
</tr>
<tr>
<td>C</td>
<td>100,000</td>
<td>971,000</td>
<td>0.103</td>
<td>9.7</td>
</tr>
<tr>
<td>D</td>
<td>72,000</td>
<td>713,000</td>
<td>0.101</td>
<td>9.9</td>
</tr>
<tr>
<td>E</td>
<td>90,000</td>
<td>910,000</td>
<td>0.099</td>
<td>10.1</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td>0.099</td>
<td>10.1</td>
</tr>
</tbody>
</table>

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

Direct Capitalization for Centre Point Case

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

\[ Value = \frac{89,100}{0.099} = 900,000 \]

\[ Value = 89,100 \times 10.1 = 900,000 \]
Important Points About Cap Rates

- **Direct capitalization only uses first year NOI**, but \( R_0 \) 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.

Understanding Cap Rates

- **\( R_0 \):** Overall rate of capitalization, or "going-in" cap rate.
- **\( R_0 \):** A ratio of initial cash flow to value
  - Future cash flows and changes in asset value also are important
- **Not a yield/discount rate.**

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

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)
Effective Gross Rent Multiplier Example

<table>
<thead>
<tr>
<th>Comparable</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent sale price</td>
<td>$876,400</td>
<td>$906,900</td>
<td>$776,300</td>
</tr>
<tr>
<td>Effective gross income (EGI)</td>
<td>$138,200</td>
<td>$135,300</td>
<td>$143,500</td>
</tr>
<tr>
<td>EGI (sale price = EGI)</td>
<td>5.54</td>
<td>5.63</td>
<td>5.81</td>
</tr>
</tbody>
</table>

Indicated value of subject = 5.53 x EGI = $896,000

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

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOI</td>
<td>$400,000</td>
<td>$350,000</td>
<td>$300,000</td>
<td>$250,000</td>
<td>$200,000</td>
</tr>
<tr>
<td>= NOI</td>
<td>$100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Operating expenses (OPEX)</td>
<td>$64,000</td>
<td>$60,744</td>
<td>$57,541</td>
<td>$54,430</td>
<td>$51,313</td>
</tr>
<tr>
<td>CapEx (Depreciation)</td>
<td>8,000</td>
<td>8,263</td>
<td>8,531</td>
<td>8,851</td>
<td>9,177</td>
</tr>
<tr>
<td>NOI</td>
<td>$92,000</td>
<td>$89,737</td>
<td>$84,230</td>
<td>$77,862</td>
<td>$70,283</td>
</tr>
<tr>
<td>Sale price at end of Year 5 = NOI / R_5 = $103,291 / 0.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= $1,033,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where R_5 is a terminal or “going-out” cap rate, slightly higher than R_4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale price (SP)</td>
<td>$1,033,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Selling expenses (SE)</td>
<td>$58,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Net sale proceeds (NSP)</td>
<td>$974,700</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Valuation of the Unlevered Cash Flows: Centre Point (Indicated Value)

<table>
<thead>
<tr>
<th>Year</th>
<th>NOI</th>
<th>Net Sale Proceeds</th>
<th>Total Cash Flow</th>
<th>Present Value @ 11.75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$89,100</td>
<td>$89,100</td>
<td>$89,100</td>
<td>$79,372</td>
</tr>
<tr>
<td>2</td>
<td>91,773</td>
<td>91,773</td>
<td>91,773</td>
<td>73,489</td>
</tr>
<tr>
<td>3</td>
<td>94,526</td>
<td>94,526</td>
<td>94,526</td>
<td>67,734</td>
</tr>
<tr>
<td>4</td>
<td>97,362</td>
<td>97,362</td>
<td>97,362</td>
<td>62,431</td>
</tr>
<tr>
<td>5</td>
<td>100,283</td>
<td>97,470</td>
<td>1,074,983</td>
<td>62,431</td>
</tr>
</tbody>
</table>

PV of NOI_4 = $97362 \left(1 + \frac{1}{1.1175}\right)^4 = 62431
Reconciliation of Value Indicators

<table>
<thead>
<tr>
<th>Approach</th>
<th>Indicated $V_a$</th>
<th>Weight (%)</th>
<th>Weighted $V_a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated value from income approach</td>
<td>$900,000$</td>
<td>60%</td>
<td>$540,000$</td>
</tr>
<tr>
<td>Direct capitalization</td>
<td>$100,000$</td>
<td>10%</td>
<td>$10,000$</td>
</tr>
<tr>
<td>Appraisal approach</td>
<td>$50,000$</td>
<td>5%</td>
<td>$2,500$</td>
</tr>
</tbody>
</table>

Appraisal Terminology: the Final Estimate of Value, shown above results from using the Indicated Values from two or more appraisal methods.

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?

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

Appendix: Other Methods of Estimating Cap Rates

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
Mortgage-Equity Rate (continued)

- **Equity**
  - **Equity cap rate** = \( \frac{BTCF}{Equity} \) = \( R_e \) (equity dividend rate)

- **Loan cap rate** = \( \frac{Loan \text{ cash flow}}{Loan} \) = \( R_m \) (Loan constant)

- **Loan-to-value ratio** = \( \frac{Loan \text{ amount}}{Price} \)
  - \( m \) (Mortgage-equity cap rate) = \( m \times R_m + (1-m) \times R_e \)

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**:
\[
R = 0.70 \times 8.89 + (1 - 0.70) \times 11.5 = 0.967, \text{ or } 9.67\%
\]

Constant Growth Cap Rate

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

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

End of Chapter 8