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

\[
P_0 = \frac{D_o (1 + g)}{r - g} = \frac{D_1}{r - g}
\]

Next dividend

Discount rate

Growing at (growth)
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

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

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

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 + $93,600) = $180,000

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

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

<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>$1,633</td>
</tr>
<tr>
<td>Sq. ft. per unit</td>
<td>790</td>
<td>910</td>
<td>900</td>
<td>893</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 and other properties
  - 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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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
  - For tax reasons would like all to be operating expenses

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Reconstructed Operating Statement:

<table>
<thead>
<tr>
<th>Stabilized Annual Income</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential gross income (PGI)</td>
<td>$100,000</td>
</tr>
<tr>
<td>Less: Vacancy and collection losses (VC)</td>
<td>$10,000</td>
</tr>
<tr>
<td>Effective gross income (EGI)</td>
<td>$90,000</td>
</tr>
<tr>
<td>Less: Operating expenses (OE)</td>
<td></td>
</tr>
<tr>
<td>Fixed expenses</td>
<td>$15,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$2,000</td>
</tr>
<tr>
<td>Utilities</td>
<td>$12,000</td>
</tr>
<tr>
<td>Garbage collection</td>
<td>$1,000</td>
</tr>
<tr>
<td>Supplies</td>
<td>$3,000</td>
</tr>
<tr>
<td>Repairs</td>
<td>$3,000</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$15,000</td>
</tr>
<tr>
<td>Management</td>
<td>$7,200</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>$39,700</td>
</tr>
<tr>
<td>Total expenses for capital expenditures</td>
<td>$39,700</td>
</tr>
<tr>
<td>Total operating income (NAI)</td>
<td>$50,300</td>
</tr>
</tbody>
</table>

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Some Sources of Industry Expense Data

- **Institute of Real Estate Management (IREM):**
  - [www.irem.org](http://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](http://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 and
    - provide equity investor with an acceptable return on equity
  - Be careful of NOI vs. NCF

First Income Valuation Method: Direct Capitalization

Basic value equation:

\[ V = \frac{\text{NOI}_1}{R_o} \]

### Warning!!!!!!

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

Compare to Gordon Model

\[ P_o = \frac{D_0 (1 + g)}{r - g} \]

Next dividend

Discount rate

Growing at (growth)

Steps in Direct Capitalization

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

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

From a comparable property

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: Centre Point Office Building

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>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$ 10,000</td>
<td>$ 995,540</td>
<td>0.087</td>
</tr>
<tr>
<td>B</td>
<td>114,000</td>
<td>1,381,244</td>
<td>0.082</td>
</tr>
<tr>
<td>C</td>
<td>100,000</td>
<td>1,250,000</td>
<td>0.080</td>
</tr>
<tr>
<td>D</td>
<td>72,000</td>
<td>108,999</td>
<td>0.089</td>
</tr>
<tr>
<td>E</td>
<td>60,000</td>
<td>1,095,561</td>
<td>0.082</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.084</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: We have assumed each is equally comparable to subject

From where do you obtain comparable NOIs and sales prices?

Non-disclosure states: Alaska, Idaho, Indiana, Kansas, Louisiana, Ohio, Minnesota, Michigan, Montana, New Mexico.

Defining the “market” for comparable selection is critically important

Direct Capitalization: Centre Point Office Building

2. Compute estimated market value, using expected first year NOI (i.e., next 12 months):

\[ \text{Value} = \frac{\$89,100}{0.084} = \$1,060,714 \]

Which we round to $1,061,00

\[ \text{Value} = \$89,100 \times 11.905 = \$1,060,735 \]

Which we round to $1,061,00
Important Points About Cap Rates

Direct capitalization only uses first year NOI, but \( R \) 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.

\( R \): Overall rate of capitalization, or “going-in” cap rate.
\( R \): A ratio of initial cash flow to value
- Future cash flows and changes in asset value also are important

Not a yield/discount rate.

U.S. Cap Rates for Three Property Types Since 1996

Understanding Cap Rates

Assume the following first-year cash flows for Centre Point:
- Purchase price: $1,056,000
- NOI: $89,100
- Sale Price at the end of year 1: $1,077,120
- Costs of sale: $0.00

\[
1st \text{ year return} = \frac{89,100 + 21,120}{1,056,000} = 10.44\% \\
= \frac{89,100}{1,056,000} + \frac{21,120}{1,056,000} = 0.0844 + 0.0200 = \text{cap rate} + \text{appreciation rate}
\]

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

\( EGIM = \text{Sale price} + \text{Effective gross income} \)
- 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>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent sale price</td>
<td>$1,044,120</td>
<td>$1,157,729</td>
</tr>
<tr>
<td>Effective gross income (EGI)</td>
<td>$158,200</td>
<td>$175,300</td>
</tr>
<tr>
<td>EGI (sale price / EGI)</td>
<td>6.69</td>
<td>6.57</td>
</tr>
<tr>
<td>Average EGI = 6.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indicated value of subject = 6.49 x EGI = 6.49 x 162,000 = 1,051,380 rounded to $1,051,000

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

DCF Example: Centre Point

<table>
<thead>
<tr>
<th>Year</th>
<th>NOI</th>
<th>Total Cash Flow</th>
<th>Present Value @ 10.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$51,100</td>
<td>$81,100</td>
<td>$81,000</td>
</tr>
<tr>
<td>2</td>
<td>91,773</td>
<td>91,773</td>
<td>75,815</td>
</tr>
<tr>
<td>3</td>
<td>94,526</td>
<td>94,526</td>
<td>73,819</td>
</tr>
<tr>
<td>4</td>
<td>97,362</td>
<td>97,362</td>
<td>65,500</td>
</tr>
<tr>
<td>5</td>
<td>100,283</td>
<td>100,283</td>
<td>765,927</td>
</tr>
</tbody>
</table>

Sale price at end of Year 5 = NOI₅ / R₅ = $103,291 / 0.0875 = $1,180,469

Where R₅ is a terminal or “going-out” cap rate, slightly higher than R₀

Sale price (SP) $1,180,469

Selling expenses (SE) 47,219 @ 4%

Net sale proceeds (NSP) $1,133,250

Valuation of the Unlevered Cash Flows: Centre Point

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

The present value, is the Indicated Value using the DCF Approach

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

Let’s review the Present Value math for NOI₄

\[
PV_{NOI₄} = \frac{NOI₄}{(1 + r)^4} = \frac{97362}{(1.10)^4} = 66500
\]

Why is the Going Out Cap Rate Higher than the Going In Cap Rate?
Reconciliation of Value Indicators

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 comparable sales
- Solution 1: Since income-producing real estate has both equity & 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 x 12
Mortgage-Equity Rate (continued)

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

**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**: 
  
  $R = 0.70 \times 8.89 + (1 - 0.70) \times 11.5$
  
  $= 0.967$, or 9.67%

**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%

**Selecting Among Different Cap Rate Estimates**

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