Chapter 8

Valuation Using the Income Approach

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)
2. Discount all future cash flows at required yield (discount rate)

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

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

Potential Gross Income (PGI)

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

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: 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)

<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>$1,510</td>
<td>$1,680</td>
<td>$1,635</td>
</tr>
<tr>
<td>Sq. ft. per unit</td>
<td>790</td>
<td>810</td>
<td>900</td>
<td>833</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 mkt 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
  - "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

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

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: Expenses that do not vary with occupancy.
    • insurance,
    • property taxes
  - Variable: Expenses that vary with occupancy.
    • Utilities
    • Maintenance & supplies
    • Trash and garbage removal

Operating Expenses

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

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
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

\[
\text{EGI} \quad \text{OE} \quad \text{CAPX} = \text{NOI}
\]

Below Line

\[
\text{EGI} \quad \text{OE} \quad \text{NOI}
\]

Reconstructed Operating Statement:

<table>
<thead>
<tr>
<th>Stabilized Annual Income</th>
<th>$100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential gross income (PGI)</td>
<td>$100,000</td>
</tr>
<tr>
<td>Loss of 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>$90,000</td>
</tr>
<tr>
<td>Fixed expenses:</td>
<td></td>
</tr>
<tr>
<td>Real estate taxes</td>
<td>$15,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$2,000</td>
</tr>
<tr>
<td>Variable expenses:</td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>$1,000</td>
</tr>
<tr>
<td>Garbage collection</td>
<td>$500</td>
</tr>
<tr>
<td>Supplies</td>
<td>$500</td>
</tr>
<tr>
<td>Repairs</td>
<td>$500</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$1,000</td>
</tr>
<tr>
<td>Management</td>
<td>$7,000</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>$16,500</td>
</tr>
<tr>
<td>Loss reserves for leasing and capital expenditures</td>
<td>$6,000</td>
</tr>
<tr>
<td>Total reserves for capital expenditures</td>
<td>$6,000</td>
</tr>
<tr>
<td>Net operating income (NOI)</td>
<td>$81,500</td>
</tr>
</tbody>
</table>

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](http://www.icsc.org)
- Urban Land Institute (ULI): [www.uli.org](http://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 mortgage debt and provide equity investor with an acceptable return
- Be careful of

<table>
<thead>
<tr>
<th>Basic value equation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ V = \frac{\text{NOI}}{R_o} ]</td>
</tr>
</tbody>
</table>

Warning! \( R_o \) is a “cap” rate, not a discount rate! 
Steps in Direct Capitalization

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

   $$R_o = \frac{\text{NOI}_1}{\text{Selling Price}}$$

   From a comparable property

2. Divide the subject’s NOI1 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>0.085</td>
<td>10.5</td>
</tr>
<tr>
<td>C</td>
<td>$100,000</td>
<td>$971,000</td>
<td>0.105</td>
<td>9.7</td>
</tr>
<tr>
<td>D</td>
<td>$72,000</td>
<td>$715,000</td>
<td>0.101</td>
<td>9.9</td>
</tr>
<tr>
<td>E</td>
<td>$90,000</td>
<td>$911,000</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?

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.

Other Sources of Cap Rates

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

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.
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

\[
\text{Going - inIRR} = \frac{\text{NOI}}{\text{Sale Price}} = \frac{89,100 + 16,650}{900,000} = 11.75\%
\]

\[
\frac{89,100 + 16,650}{900,000} = 0.099 + 0.0185
\]

= cap rate + 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

• \( EGIM = \) 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

\[
\text{Indicated value of subject} = 5.53 \times \text{EGI} = 5.53 \times 162,000 = 896,860, \text{or} \$896,000
\]

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

DCF Example: Centre Point

Sale price at end of Year 5 = \( NOI_5 + R_t \) = $103,291.00

Where \( R_t \) is a terminal or “going-out” cap rate, slightly higher than \( R_o \)

\[
\text{Sale price (SP)} = 1,033,000
\]

\[
\text{Selling expenses (SE)} = 58,300
\]

\[
\text{Net sale proceeds (NSP)} = 974,700
\]
Valuation of the Unlevered Cash Flows: Centre Point

<table>
<thead>
<tr>
<th>Year</th>
<th>NOI</th>
<th>Net Sale Proceeds</th>
<th>Total Cash Flow</th>
<th>Present Value @17.75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$89,100</td>
<td>$89,100</td>
<td>$79,232</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>91,773</td>
<td>91,773</td>
<td>73,489</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>94,526</td>
<td>94,526</td>
<td>62,274</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>97,362</td>
<td>97,362</td>
<td>62,431</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>100,383</td>
<td>$974,790</td>
<td>$616,927</td>
<td></td>
</tr>
</tbody>
</table>

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

Reconciliation of Value Indicators

<table>
<thead>
<tr>
<th>Approach</th>
<th>Indicated r&lt;sub&gt;p&lt;/sub&gt;</th>
<th>Weight (%)</th>
<th>Weighted r&lt;sub&gt;p&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced value from income approach</td>
<td>900,000</td>
<td>80%</td>
<td>720,000</td>
</tr>
<tr>
<td>DCF analysis</td>
<td>910,000</td>
<td>90%</td>
<td>819,000</td>
</tr>
<tr>
<td>Direct capitalization</td>
<td>910,000</td>
<td>90%</td>
<td>819,000</td>
</tr>
<tr>
<td>GGR analysis</td>
<td>890,000</td>
<td>80%</td>
<td>712,000</td>
</tr>
<tr>
<td>Indicated value from cost approach</td>
<td>830,000</td>
<td>3%</td>
<td>24,900</td>
</tr>
<tr>
<td>Indicated value from sales comparison approach</td>
<td>700,000</td>
<td>1%</td>
<td>7,000</td>
</tr>
</tbody>
</table>

Weighted r<sub>p</sub> added to yield final estimate of value: $990,550

Result to: $980,000

So...What’s Better?

• Is direct capitalization using R<sub>p</sub> 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

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

Appendix: Other Methods of Estimating Cap Rates
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) = $m \times R_m + (1-m) \times R_e$

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

Constant Growth Cap Rate

- Recall one-year total yield example:
  \[ \text{Total yield} = \text{Cap rate} + \text{Appreciation rate} \]
  \[ => \text{Cap rate} = \text{Total yield} – \text{Appreciation rate} \]
- Assume required total yield is 11.75%
- Assume expected appreciation rate of 2.0%
  \[ => \text{cap rate} = 11.75 – 2.0 \]
  \[ = 9.75\% \]

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