Chapter 10

Valuation of Income Properties: Appraisal and the Market for Capital

Valuation Fundamentals

- <u>Market Value</u> is the most probable price given the following conditions
  - Buyer and seller are typically motivated
  - Parties are well informed/well advised and acting in their best interest
  - Reasonable time in the market
  - Payment in cash or its equivalent
  - Traditional financing markets are functioning

Appraisal Industry

- Need for appraisers exists
  - Buyers
  - Sellers
  - Corporate Owners (accounting requirements)
- Industry Organizations and Designations*
- Need for quality standards led to regulation
- State licensing of appraisal industry
  - Education requirements
  - Different levels (classifications)
  - Texas Appraiser Licensing & Certification Board (TALCB)

MAI is a well know designation of the Appraisal Institute. Others as well.

Appraisal Process

- The appraisal process is performed by appraisers and others seeking to establish value
  - Physical and legal identification
  - Identify property rights to be valued
  - Specify the purpose of the appraisal
  - Specify effective date of value estimate
  - Gather and analyze market data
  - Apply techniques to estimate value
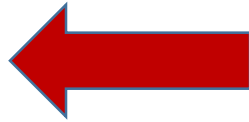

The Art of Appraisal

Appraisal Process
Estimating Value

- The Three Approaches

1. Sales Comparison Approach
2. Cost Approach
3. Income Approach

For most of this textbook, we will focus on the income approach, but the other two have substantial validity also.

1. Sales Comparison Approach

- Use data from recently sold "comparables" to derive a "subject" market value

- Adjust comparable sales prices for feature, age, and size differences, etc.

- Lump sum adjustments and square foot adjustments

- Subjective process

- Widely used in residential market as primary valuation metric

Sales Comparison Approach: Residential Example

Line	Item	Comparable Sale A		Comparable Sale B		Comparable Sale C	
1	Address	1702 Brookside Ave.		1912 Brookside Ave.		1501 18th Street	
2	Sales price		$ 191,800		$188,000		$188,300
3	Time adjustment	sold 6 mos. ago, add 5%	+ 4,590	sold 3 mos. ago, add 2.5%	+2,200	just sold	0
4	House size	160 sq ft larger at $60 per sq ft	–9,600	20 sq ft smaller at $60 per sq ft	+1,200	same size	0
5	Garage/carport	carport	+4,000	3-car garage	–2,000	2-car garage	0
6	Other	larger patio	–300	no patio	+900		
7	Age, upkeep, & overall quality of house	superior	–3,000	inferior	+800	equal	0
8	Landscaping	inferior	+2,000	equal	0	superior	–900
9	Lot size, features, & location	superior	–3,890	inferior	+900	equal	0
10	Terms & conditions of sale	equal	0	special financing	–1,500	equal	0
11	Total adjustments		–6,200		+2,500		–900
12	ADJUSTED MARKET PRICE		$185,600		$190,500		$187,400
13	Correlation process:						

Comparable A $185,600 × 20% = $ 37,120
Comparable B $190,500 × 30% =   57,150
Comparable C $187,400 × 50% =   93,700

14	INDICATED VALUE	$ 187,970
	Round to	$188,000

2. Cost Approach

- The rationale is that no informed buyer would pay more for a property than it would cost to build a new one. This assumes, of course, that they took the time to construct a new asset into account, and the relative risks of ground up development.

- The cost approach is often used for real estate assets that do not have an efficient market for tenants to lease space. A common example would be heavy manufacturing facilities; there is not a deep or broad market in automobile manufacturing facilities.

- Estimate the construction cost if new

- Account for physical deterioration, functional obsolescence, and/or external obsolescence

- Add land cost

Cost Approach Example

Reproduction/replacement cost	$200,000
– Accrued (total) depreciation	<u>– $50,000</u>
Depreciated value of improvements	$150,000
+ Land value	<u>+ $60,000</u>
Estimated value	$210,000

3. Income Approach

- There are three methods for the income approach.

1. Multipliers
   - Gross Income Multiplier (text)
   - Effective Gross Income (EGI) Multiplier
   - Net Operating Income (NOI) Multiplier
2. Direct Capitalization Method
3. Discount Present Value Method

Based on a single year's estimates

What is Income? Terminology

	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	←

*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."

Bottom line: Cash flow before debt service and before taxes.
"Unleveraged" Cash Flow

Income Approach #1 - Multipliers

- 1st Income Method: Gross Income Multiplier ("GIM")

$$\text{GIM} = \frac{\text{Sales Price}}{\text{Gross Income}}$$

- Apply GIM to the subject property

- Example 10-1: Recent sales of similar property

	1	**2**	**3**
Sales Price	$600,000	$750,000	$450,000
Gross Income	$100,000	$128,000	$74,000
GIM	6x	5.86x	6.08x

Income Approach #1- Multipliers

- Selecting the GIM from the comparables is a subjective opinion. (estimate)
  - Which is most similar to the subject?
  - How should they be weighted?
  - Say 6x is determined to be the GIM for this market

  - If subject has gross income = $120,000;

    Value Estimate = 6 x $120,000 = $720,000

Income Approach #1
Multipliers applied at different levels

Proforma Data

Sales Price	$600,000	$750,000	$ 450,000
Gross Income	100,000	128,000	74,000
Effective Gross Income	90,000	114,000	69,000
NOI	62,000	86,000	48,000

Implied Multipliers

GI Multiplier	6.0	5.9	6.1
EGIM	6.7	6.6	6.5
NOI Multiplier	9.7	8.7	9.4
Reciprocal of NOI Multiplier (Cap rate)	.103	.1149	.106

Income Approach #2

- 2nd Income Method: Direct Capitalization

- R is called the "Cap Rate"

$$R = \frac{NOI}{Value} \qquad\qquad Value = \frac{NOI}{R}$$

- Example 10- 2: Recent similar property sales

	1	2	3	4
Sales Price	$368,500	$425,000	$310,000	$500,000
NOI	$50,000	$56,100	$42,700	$68,600
R	13.57%	13.20%	13.77%	13.72%

Income Approach #2

- Capitalization Rate **Estimate**:
  - ➢ Say 13.5%
- The cap rate choice is an educated opinion of the appraiser
  - ➢ Which property is most similar to the subject?

- Cap Rate is also called "going-in" cap rate as it is the valuation as we contemplate buying or "going-in" to the property
- Cap Rate ≠ Discount Rate

Income Approach 2

- Cap Rate estimated at 13.5%
- If the Subject NOI = $58,000, the value estimate could be

  $$\frac{\$58{,}000}{.135}$$

  - At 13.5%, Est. Value = $429,630
  - A *range* of values could be determined for a range of cap rates.

- Care must be taken when determining R
- Care must be taken when determining NOI_1

Income Approach 2 - more

- Considerations when determining R

- A higher value ➜ Lower Cap Rate

- Consider the comparables
  - Similarity to subject
    - Physical Attributes
    - Location
    - Lease Terms
    - Operating Efficiency

Income Approach 2

- Consider the comparables
  - How is NOI determined?
    - Stabilized NOI
    - Nonrecurring capital outlays
      - Lump Sum
      - Averaged
    - Was NOI skewed by a one-time outlay?
  - Depending on the analyst, capital outlays may or may not be including in the calculation of net operating income. Generally other costs such as leasing commissions and tenant improvements are separate.

NOI and CAPEX
Which is correct?

NOI with Replacement Reserves

Total Rental Square Feet		100,000
Average Rent per Square Foot	$	10.00

Gross Potential Income	$	1,000,000
Vacancy & Credit Loss		10%
Effective Rental Income	$	900,000
Other Income	$	10,000
Gross Operating Income	$	910,000
Property Taxes	$	40,000
Insurance	$	15,000
Maintenance	$	20,000
Management Fee	$	35,000
Reserves for Replacement	$	50,000
Other expenses	$	-
Total Expenses	$	160,000
Net Operating Income	$	750,000

Cap Rate		8%
NOI / Cap Rate = Value	$	9,375,000

NOI without Replacement Reserves

Total Rental Square Feet		100,000
Average Rent per Square Foot	$	10.00

Gross Potential Income	$	1,000,000
Vacancy & Credit Loss		10%
Effective Rental Income	$	900,000
Other Income	$	10,000
Gross Operating Income	$	910,000
Property Taxes	$	40,000
Insurance	$	15,000
Maintenance	$	20,000
Management Fee	$	35,000
Other expenses	$	-
Total Expenses	$	110,000
Net Operating Income	$	800,000
Reserves for Replacement	$	50,000
Cash Flow Before Tax	$	750,000

Cap Rate		8%
NOI / Cap Rate = Value	$	10,000,000

Above proformas are on the same property. Simply applying a "cap rate" of 8% suggests different value.

Income Approach #3 – DCF
Multiple years of data required

- 3rd Income Method:

- Discounted Present Value
  - Compute the present value of future cash flows
    - Choose holding period (say 9 years for example)
    - Forecast NOI for each year
    - Determine reversion (sale) value of property
    - Select **discount rate** *(required rate of return)* based on risk and return of comparable investments (r) *(not same as cap rate)*

Income Approach

CONTRAST these rate concepts

- **R** = "cap rate"

- **r** = discount rate (required rate of return)

- **k** = required return on equity (covered later in chapter)

- **IRR** = a mathematical rate of return based on a *given a <u>complete</u> set of cash flows*.

  - If IRR > r,   then project should be worth pursuit.

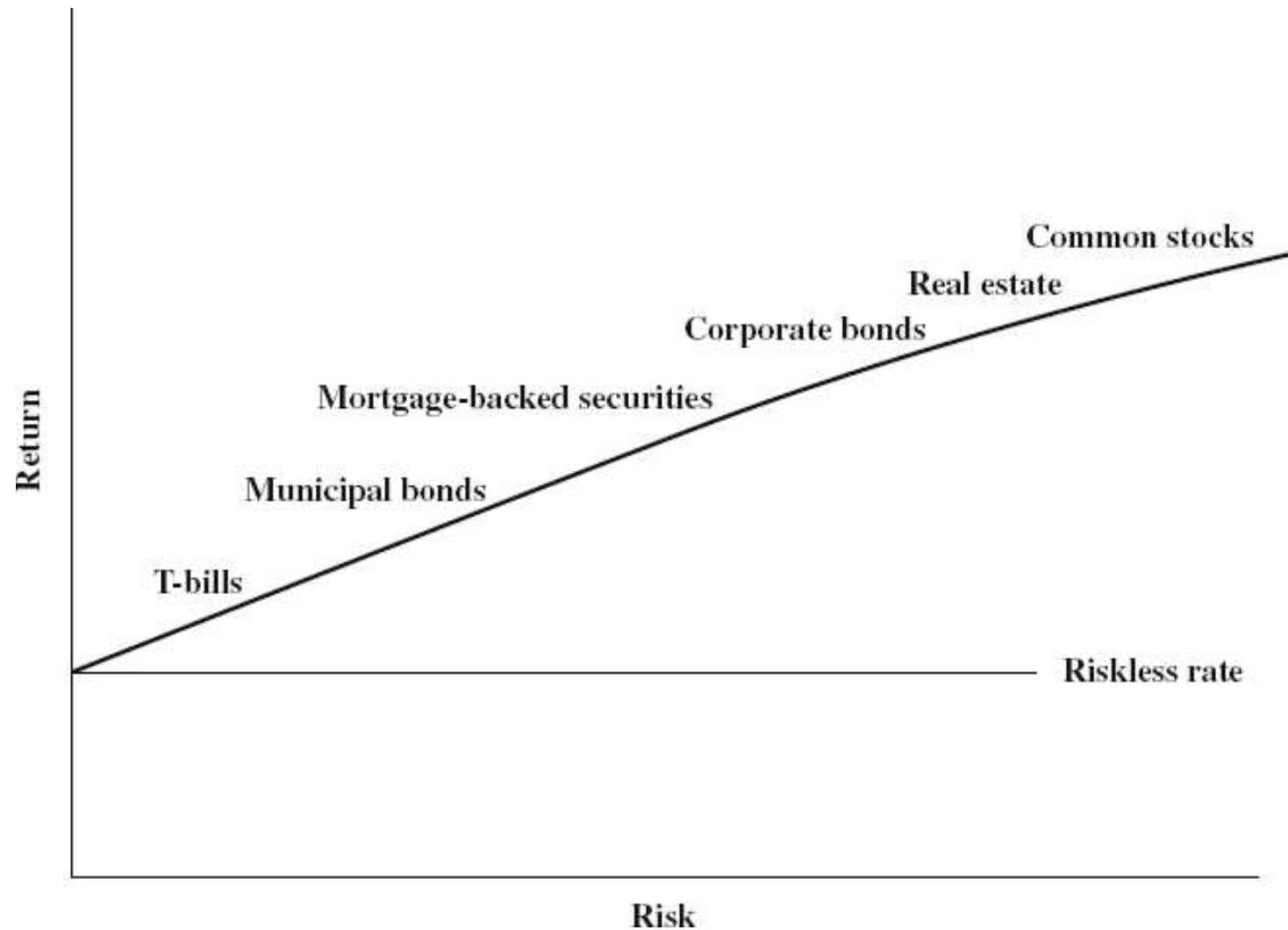# Risk and Return (alternative investments)

Exhibit 10-6 of text

Ten-Year *NOI* Forecast, Hypothetical Hills Apartments

Ten years of data provided, BUT we are going to assume a
9 year holding period in this example; with r = 12%.

Year	NOI	% Growth	Year	NOI	% Growth
1	$338,800	—	6	$416,127	3
2	355,740	5	7	428,611	3
3	373,527	5	8	441,469	3
4	388,468	4	9	450,299	2
5	404,007	4	10	459,304	2

These are not ALL of the cash flows however.

We need to estimate a sales value at the end of our holding
period. This "sales price" can be referred to as *reversion value
(text), terminal value, horizon value, "going-out" value or re-sale
price*.

Cash flows and DCF for 9 years

Exhibit 10-8

r	=	0.12
g (year10)	=	0.02

	1	2	3	4	5	6	7	8	9	10
NOI	338,800	355,740	373,527	388,468	404,007	416,127	428,611	441,469	450,299	459,304
Sale									4,593,040	
CF	338,800	355,740	373,527	388,468	404,007	416,127	428,611	441,469	5,043,339	
DCF factor	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066	0.4523	0.4039	0.3606	
PV by year	302,500	283,594	265,869	246,878	229,244	210,823	193,882	178,302	1,818,679	

How do we estimate this "reversion" value?

Total PV
3,729,771

Income Approach 3 - DCF Estimating Sale Value

Sale Value often called "Reversion" value

Important part of valuation exercise.
Not an exact science

Text suggests three methodologies

A. Estimate using a *derived* "terminal cap rate" *(applies finance theory)*
B. Estimate "terminal cap rate" by comparing with older properties
C. Other ways to estimate value of property

Income Approach 3 DCF

- Estimating reversion (sale) value

  - Method A: Estimate value of remaining cash flows using a terminal cap rate (R_T) estimated by finance theory (*derived*).

    - This aligns with finance theory
    - $R_T = (r - g)$
    - Terminal cap rate = "going-out" cap rate

    Note: r = required return; g = growth rate *(stabilized)*

Income Approach 3 DCF

$$REV_9 = \frac{NOI_{10}}{r - g}$$

Text uses a 9 year holding period thus looks to year 10 or "next year's" expected income to capitalize the NOI.
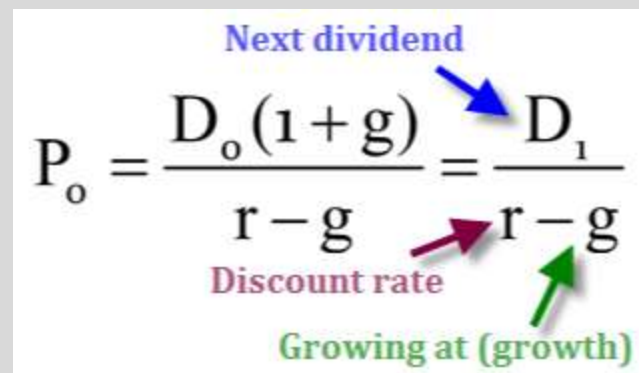
Another perspective:

$$\text{Sale Value}_{\text{year of sale}} = \frac{NOI_{\text{year after sale}}}{r - g}$$

Our Example: $459,304/(.12-.02) = $4,593,040

Finance Tie in:
Dividend (Gordon) Growth Model

- Value is based on future dividends (or CF)
- Dividends are expected to grow at a constant percent per period.
  - $P_0 = D_1 /(1+r) + D_2 /(1+r)^2 + D_3 /(1+r)^3 + \ldots$
  - $P_0 = D_0(1+g)/(1+r) + D_0(1+g)^2/(1+r)^2 + D_0(1+g)^3/(1+r)^3 + \ldots$
- With a little algebra and some series work, this reduces to:

Next dividend

$$P_o = \frac{D_o(1+g)}{r-g} = \frac{D_1}{r-g}$$

Discount rate

Growing at (growth)

Income Approach 3 DCF

- Estimating reversion value
  - Method B: Estimate R_T from sales data on older properties ("going-out" cap rate) Market driven estimate.
    - 9 year holding period for new property
    - In general, as properties age, they become less able to produce income relative to their younger peers. As a result, the cap rate should be higher for older properties.
    - What are current cap rates for properties 9 years older than subject?
    - Consider adjusting for any expected market changes
    - Use this as the terminal cap rate.

    - In our text example, p a market survey indicated that 10 year old properties have been trading at a "10.25" cap. This would indicate a value of $459,304/.1025 = $4,481,014.

Income Approach DCF

— Method C: Estimate resale value from expected changes in property value

— Just "assume" property value increases at x% annually; text assumes 2%

— Text estimated "reversion" value of $4,354,708

Which approach did we use for Terminal Value?

Exhibit 10-8

r	=	0.12
g (year10)	=	0.02

	1	2	3	4	5	6	7	8	9	10
NOI	338,800	355,740	373,527	388,468	404,007	416,127	428,611	441,469	450,299	459,304
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PV by year	302,500	283,594	265,869	246,878	229,244	210,823	193,882	178,302	1,818,679	

Total PV

3,729,771

Implied "going in" cap rate by our valuation: 338,800/3,729,771 = 0.0908 = 9.08%

Oakwood Apartments – Mini Case

- See Excel file Ch 10 Oakwood tab

    - Note: 14e and 15/16e numbers are slightly different

- Review/comment

Conclusion – We completed 3 Approaches

The Appraiser's Estimate

- Reconciliation of Value Estimates using all three valuation approaches
  - The sales comparison and income approaches should yield similar value estimates
  - Cost approach may have to be relied on for special properties
  - Appraiser should contrast/compare each method and use professional judgement
  - Appraiser shows consideration of all methods, reconciles differences and justifies weightings used in arriving at estimated value.

Consider Review of **Problem 10-8**

Highest & Best Use
Land Valuation

- Land prices are volatile relative to income producing real estate.

- The land price is determined by its highest and best use, which is the use that results in the highest land value.

- "Residual" concept of land valuation

Highest & Best Use - Land

- Residual Land Value
  - ➤ Total Value – Building Cost = Land Value

  - ➤ Step 1: Compute/estimate the present value of the estimated cash flows for all alternatives "*as if built*".
  - ➤ Step 2: Subtract cost to build; remainder is residual value of land
  - ➤ Step 3: Select highest value among the alternatives

  See Example tab in Excel file Ch10 H&BU

Mortgage-Equity Capitalization (Concept of Valuation)

Introducing Leverage

So far: "Free and clear" analysis

What about "Equity investment" with some debt on property?

Valuation?
Property Value = Debt + Equity Value

Balance Sheet Concept
Values from text example
(see next 2 slides also)

Total Value 501,960	Debt 336,394
	Equity 165,566

Lender Position/Requirements

- Lender is a "stakeholder" and will advance part of purchase price in most deals

- Typical lender has no "upside"

- Recourse vs. Non-recourse mortgage

- Lender wants to be sure there is sufficient cash flow to "cover" the payments

  - **DCR**[1] (Debt Coverage Ratio) indicates how much cushion the lender requires

  - 1.2 DCR means property must generate

    1.2 times (or 120% of) amount needed for debt service

[1.] Also called Debt Service Coverage Ratio (DSCR). "Debt service" is the total amount of the payment and includes principal in the case of an amortizing loan.

Text Exhibit

PROPERTY CASH FLOWS (GIVEN)						
Growth rate		3%				
Terminal Cap Rate		11%				
Req'd rate of return to Equity *(k)*		12%				
Debt Structure						
Required Debt Coverage		1.20				
Amortization term		20	years			
i Rate on debt		11%				
Max Debt Amount		$336,394	⟵	formula requires explanation		
	1	**2**	**3**	**4**	**5**	**6**
NOI	50,000	51,500	53,045	54,636	56,275	57,964
Debt Service	-41,667	-41,667	-41,667	-41,667	-41,667	
Sale Proceeds					526,943	
Less Mortgage Payoff					-305,493	
Cash Flow (to equity)	8,333	9,833	11,378	12,970	236,059	
DCF OF ABOVE (PV)						
$165,567						

Mortgage-Equity Capitalization

- $PV_{Property}$ = Mortgage + PV_{Equity}
- Determine PV_{Equity} by DCF analysis of CF "to equity"
- Determining the discount rate to use for the equity value (k) is challenging
  - It should be greater than the discount rate for the lender
  - It should be greater than the discount rate for unlevered property (all cash valuation)
  - It should be competitive when compared to other investments of similar risk & leverage

Mortgage-Equity Capitalization

Another example:

Problem 10-9 (explaining mortgage calcs)

Cap Rates – Review
How are cap rates affected?

	Values	Cap Rates
▪ Increase in demand	↑	↓
▪ Increasing interest rates	↓	↑
▪ New zoning restrictions	↑	↓
▪ REIT tax laws relaxed	↑	↓
▪ New supply coming on	↓	↑
▪ Banks required divestiture	↓	↑
▪ Global financial crisis	?	?