

Chapter 3

Measuring & Listing

Ten Components of Structure

When valuing a building, assessors use ten basic components to determine grade.

The components are:

1. Foundation
2. Basement
3. Framing
4. Roof
5. Interior
6. Exterior
7. Floors
8. Heating
9. Plumbing
10. Electrical

There are five grades applicable to buildings.

These can be listed A-E

Or 5-1

A or 5 being the highest = Architecturally designed, contractor built. Using best materials.

E or 1 being the lowest = Basic shelter, but inadequate for residential living. Crude workmanship

Class Problem

Using Grading Schedule on page 47

The following is a sample grading calculation for a 1-story wood frame dwelling measuring 1,120 sq ft

1. Foundation

Grade 3.6

8' excavation grade: 4

8x18 footing grade: 3

8" poured concrete walls grade: 3

drainage outside only grade: 3

good site work grade: 5

Average grade = $(4 + 3 + 3 + 3 + 5)/5 = 3.6$

Repeat for each of the 10 items

Foundation:	Grade: 3.6
Basement:	Grade: 3.3
Framing:	Grade: 3.6
Roof:	Grade: 3.3
Interior:	Grade: 3.8
Exterior:	Grade: 3.6
Floors:	Grade: 4.0
Heating:	Grade: 4.0
Plumbing:	Grade: 4.0
Electrical:	Grade: 3.0
Total Grade:	$(3.6 + 3.3 + 3.6 + 3.3 + 3.8 + 3.6 + 4.0 + 4.0 + 4.0 + 3.0)/10 = 3.62$

Total Grade (rounded) : 3.6

Chapter 4

The Cost Approach

The most popular and effective method of property valuation is the cost approach.

This approach uses construction cost schedules. These schedules show an average cost of construction for buildings according to their size, quality of construction, type of structure, and structural details.

Steps in the Cost Approach

To determine the value of improvements under the cost approach, an assessor must perform three steps:

- 1) Establish the replacement cost of the buildings:
 - a. Measure and inspect the building;
 - b. Establish grades for the ten components of structure; and
 - c. Determine the replacement cost from cost schedules, based on building size and grade.

2) Establish depreciation and subtract from replacement cost:

- a. Physical deterioration;
- b. Functional obsolescence; and
- c. External obsolescence.

3) Determine land value

Land value is determined through a municipality's land pricing schedules. Those pricing schedules are developed through analysis of land sales and other property sales with the improvement values removed. For purposes of this chapter, land values will be given.

Use of Cost Schedules

This text references the State of Maine Assessment Manual. This manual is used by Property Tax Division personnel in the valuation of property in the unorganized territory.

The grade of a building reflects only the quality of the building, the materials and workmanship, the level of detail, and quality of finish work. Cost varies with quality and any error or misjudgment in determining the quality of construction will adversely affect the final value estimate.

Once the grade is established, an assessor can determine the property's replacement cost from the appropriate cost schedule. Replacement cost is defined as the cost to replace a building using current construction methods and materials. Replacement cost differs from reproduction cost in that reproduction involves using the same construction methods and materials as in the existing structure.

The next step in valuing property using the cost method is to determine the **condition** of the property. Condition differs from grade in that condition relates to the value of a structure after wear and tear and obsolescence have been recognized.

The assessing term for wear and tear is **depreciation**

The International Association of Assessing Officers (IAAO) defines depreciation as:

“Loss in value of an object, relative to its replacement cost new, reproduction cost new, or original cost, whatever the cause of the loss in value. Depreciation is sometimes subdivided into three types: physical deterioration (wear and tear), functional obsolescence (suboptimal design in light of current technologies or tastes), and external obsolescence (poor location or radically diminished demand for the product)

Depreciation is the difference between replacement cost new and market value. This is also referred to “accrued depreciation”; it is the measure of the total value lost to depreciation.

Current Cost Factor

The current cost factor is a periodic adjustment to the cost tables to reflect market fluctuations in construction costs over time. For example, if the cost schedules being used are ten years old, then the current cost factor adjusts the costs to reflect the changes over the last ten years. This cost factor is applied after replacement costs for all improvements have been estimated, and before depreciation is applied.

Income Approach

Maine Property Tax School

The income approach creates a value estimate for income-producing property based on the anticipated income from that property.

The income approach is sometimes referred to as the income capitalization approach, since the calculated value is the result of the application of a capitalization rate to estimated future income.

The capitalization rate converts the future income to a present value.

The basic formula for the income approach is:

$$V = I/R$$

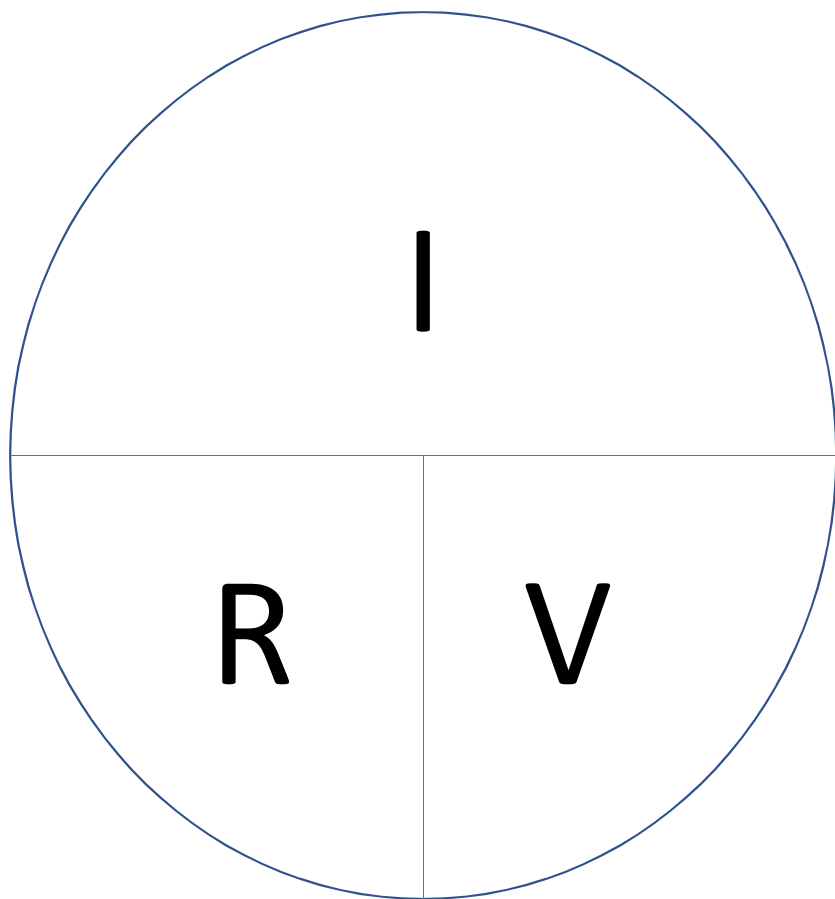
where V = Value

I = Income

R = Rate.

Income is an estimate of future net operating income for the property.

Rate is the capitalization rate – or cap rate, for short.



Definitions

- Potential Gross Income – The maximum revenue expected to be generated in the future. For purposes of direct capitalization, estimated income for the first year following the valuation date is used for potential gross income.
- Net Operating Income – Potential gross income, plus miscellaneous income, less vacancy and collection loss, less operating expenses.
- Miscellaneous Income – Income from sources incidental to the primary function of a property. For example, in rental property, miscellaneous income would be revenue generated from laundry facilities, garage or storage space.
- Vacancy and Collection Loss – Rent loss due to vacancy and loss from inability to collect all rent due.
- Operating Expenses – Generally, all recurring expenses that are subtracted from gross income to produce net operating income. Operating expenses fall into three categories:
 1. Fixed costs, such as real estate taxes and mortgage loan payments;
 2. Variable costs, such as administration, utilities, and supplies;
 3. Replacement reserves – funds set aside for ongoing, periodic costs, such as roof repair.

- Recapture Rate – The annual rate at which an investment is returned over the economic life of property. The recapture rate applies only to buildings and other improvements. Land is not subject to a recapture rate because it generally does not have a finite economic life and does not lose value. The recapture rate is calculated by the equation: $1/(\text{economic life of asset})$.
- Vacancy and Collection Loss – Rent loss due to vacancy and loss from inability to collect all rent due.
- Yield Capitalization – The yield capitalization method uses income estimates from multiple years following the valuation date to calculate the estimated value of income-producing property.

Potential gross income, plus miscellaneous income, less vacancy and collection loss, less operating expenses equal the property's net operating income (NOI).

$$\begin{array}{r} \text{PGI} \\ + \text{MI} \\ - \text{VCL} \\ - \text{OE} \\ \hline = \text{NOI} \end{array}$$

Capitalization

When analyzing an income stream, investors commonly are concerned with two things:

1. The return of investment, or recapture of the initial amount of money invested; and
2. The return on investment, the amount of profit generated by the investment.

Steps in the Direct Capitalization Process

1. Determine net operating income (I):

Potential gross income (PGI)
Plus: Miscellaneous income (MI)
Less: Vacancy and collection losses (VCL)
Less: Operating expenses (OE)
Equals: Net Operating Income

2. Determine capitalization rate (R)

Recapture rate
Plus: Effective tax rate
Plus: Interest rate
Equals: Capitalization Rate

3. Compute value (V)

$V = \text{Net operating income} / \text{capitalization rate}$

$= I/R$

Determining the Capitalization Rate

There are three components in a capitalization rate for developed property. They are:

- discount rate
 1. mortgage interest rate = return on borrowed funds
 2. equity yield rate = return on investor's equity

For purposes of this text, we will assume that funds used for purchase of property are borrowed, meaning the discount rate will be equal to the mortgage interest rate.
- recapture rate
- effective tax rate

Problem 6.3. Bob, a developer, is planning to build an apartment building on a vacant parcel of land for sale. He wants to know if the project is a good investment. To determine this, he needs an estimate of the property value including the land and building. Bob has put together the following estimates:

PGI = \$35,000

MI = \$1,500

VCL = 3.5% of PGI

OE = \$8,750

Sale price of land = \$50,000

Economic life of proposed building = 40 years

Current mortgage interest rate = 4.0%

Local tax rate = 20 mills

Municipal declared ratio = 90%

PGI = \$35,000

MI = \$1,500

VCL = 3.5% of PGI

OE = \$8,750

Sale price of land = \$50,000

Economic life of proposed building = 40 years

Current mortgage interest rate = 4.0%

Local tax rate = 20 mills

Municipal declared ratio = 90%

1) What is the net operating income?

PGI = 35,000

MI + 1,500

VCL - 1,225 (.035 x 35,000)

EGI 35,275

OE - 8,750

NOI 26,525

2) Rate for the land = Effective tax Rate + Interest Rate

ETR = Declared Ratio X Mill Rate

ETR = 0.90 x .020

ETR = 0.018

$R_{\text{land}} = \text{Interest Rate} + \text{ETR}$

0.04 + .018

$R_{\text{land}} = 0.058$

PGI = \$35,000

MI = \$1,500

VCL = 3.5% of PGI

OE = \$8,750

Sale price of land = \$50,000

Economic life of proposed building =
40 years

Current mortgage interest rate = 4.0%

Local tax rate = 20 mills

Municipal declared ratio = 90%

3) R for the Building (R_{building}) = R_{land} + Recapture

Recapture = $1/\text{Economic Life of building}$

= $1/40$

= 0.025

$R_{\text{building}} = 0.058 + .025$

0.083

PGI = \$35,000

MI = \$1,500

VCL = 3.5% of PGI

OE = \$8,750

Sale price of land = \$50,000

Economic life of proposed

building = 40 years

Current mortgage interest rate =

4.0%

Local tax rate = 20 mills

Municipal declared ratio = 90%

	Income	Rate	Value
Land	2,900	0.058	50,000
Building	23,625	0.083	284,638
Total	26,525		334,638

PGI = \$35,000

MI = \$1,500

VCL = 3.5% of PGI

OE = \$8,750

Sale price of land = \$50,000

Economic life of proposed building =
40 years

Current mortgage interest rate =
4.0%

Local tax rate = 20 mills

Municipal declared ratio = 90%

$$\text{Income}_{\text{Land}} = \text{Rate}_{\text{Land}} \times \text{Value}_{\text{Land}}$$

$$\text{Income}_{\text{Building}} = \text{Income}_{\text{Total}} - \text{Income}_{\text{Land}}$$

$$\text{Value}_{\text{Building}} = \text{Income}_{\text{Building}} / \text{Rate}_{\text{Building}}$$

Problem 6.?. Bob now wants to purchase an existing apartment building that is on the market for \$1.5 million. He wants to know if the property is a good investment. To determine this, he needs an estimate of the property value including the land and building. Bob has put together the following estimates:

PGI = \$25,000

MI = \$1,000

VCL = 3.5% of PGI

OE = \$5,000

Sale price of land = \$60,000

Economic life of proposed building = 20 years

Current mortgage interest rate = 3.5%

Local tax rate = 20 mills

Municipal declared ratio = 90%

PGI = \$25,000

MI = \$1,000

VCL = 3.5% of PGI

OE = \$5,000

Sale price of land = \$60,000

Economic life of proposed building = 20 years

Current mortgage interest rate = 3.5%

Local tax rate = 20 mills

Municipal declared ratio = 90%

1) What is the net operating income?

PGI = 25,000

MI + 1,000

VCL - 875 (.035 x 25,000)

EGI 26,875

OE - 5,000

NOI 21,875

2) Rate for the land = Effective tax Rate + Interest Rate

ETR = Declared Ratio X Mill Rate

ETR = 0.90 x .020

ETR = 0.018

$R_{\text{land}} = \text{Interest Rate} + \text{ETR}$

0.035 + .018

$R_{\text{land}} = 0.053$

PGI = \$25,000

MI = \$1,000

VCL = 3.5% of PGI

OE = \$5,000

Sale price of land = \$60,000

Economic life of proposed building =
20 years

Current mortgage interest rate = 3.5%

Local tax rate = 20 mills

Municipal declared ratio = 90%

3) R for the Building (R_{building}) = R_{land} + Recapture

Recapture = $1/\text{Economic Life of building}$

= $1/20$

= 0.050

$R_{\text{building}} = 0.053 + .050$

0.103

PGI = \$25,000

MI = \$1,000

VCL = 3.5% of PGI

OE = \$5,000

Sale price of land = \$60,000

Economic life of proposed

building = 20 years

Current mortgage interest rate =
3.5%

Local tax rate = 20 mills

Municipal declared ratio = 90%

	Income	Rate	Value
Land	3,180	0.053	60,000
Building	18,695	0.103	181,504
Total	21,875		241,504

PGI = \$25,000

MI = \$1,000

VCL = 3.5% of PGI

OE = \$5,000

Sale price of land = \$60,000

Economic life of proposed building =
20 years

Current mortgage interest rate =
3.5%

Local tax rate = 20 mills

Municipal declared ratio = 90%

$$\text{Income}_{\text{Land}} = \text{Rate}_{\text{Land}} \times \text{Value}_{\text{Land}}$$

$$\text{Income}_{\text{Building}} = \text{Income}_{\text{Total}} - \text{Income}_{\text{Land}}$$

$$\text{Value}_{\text{Building}} = \text{Income}_{\text{Building}} / \text{Rate}_{\text{Building}}$$

Sales Comparison

Market Analysis

Paired Sales Analysis

- Step 1: On a grid, note the differences between sales and the subject.
- Step 2: Find a set of comparables that differ in only one respect.
- Step 3: Using the paired sales determine whether the presence of the feature is a positive or negative, and the value of the adjustment
- Step 4: Enter in the grid an adjustment for each comparable that has this difference.
- Step 5: Repeat steps 2, 3, and 4 until all differences are accounted for.

	Subject	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5	Sale 6
Price	?	\$105,000	\$101,000	\$96,000	\$109,800	\$103,000	\$103,800
Cond of Improv	Good	Good (Same)	Poor	Poor	Good (Same)	Good (Same)	Poor
Adjusted Price							
Site shape	Irreg	Reg.	Reg.	Irreg.(Same)	Irreg.(Same)	Reg.	Irreg.(Same)
Adjusted price							
Garage	1 car	2 Car	1 Car (Same)	1 Car (Same)	2 Car	1 Car (Same)	2 Car
Adjusted Price							
View	Yes	No	Yes (Same)	No	Yes (Same)	No	Yes (Same)
Adjusted Price							
Access	Poor	Poor (Same)	Poor (Same)	Poor (Same)	Good	Poor (Same)	Good
Adjusted Price							
Price after adj.							

	Subject	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5	Sale 6
Price	?	\$105,000	\$101,000	\$96,000	\$109,800	\$103,000	\$103,800
Cond of Improv	Good	Good (Same)	Poor	Poor	Good (Same)	Good (Same)	Poor
Adjusted Price							
Site shape	Irreg	Reg.	Reg.	Irreg.(Same)	Irreg.(Same)	Reg.	Irreg.(Same)
Adjusted price							
Garage	1 car	2 Car	1 Car (Same)	1 Car (Same)	2 Car	1 Car (Same)	2 Car
Adjusted Price							
View	Yes	No	Yes (Same)	No	Yes (Same)	No	Yes (Same)
Adjusted Price							
Access	Poor	Poor (Same)	Poor (Same)	Poor (Same)	Good	Poor (Same)	Good
Adjusted Price							
Price after adj.							

	Subject	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5	Sale 6
Price	?	\$105,000	\$101,000	\$96,000	\$109,800	\$103,000	\$103,800
Cond of Improv	Good	Good (Same)	Poor +	Poor +	Good (Same)	Good (Same)	Poor +
Adjusted Price							\$6,000
Site shape	Irreg	Reg. +	Reg. +	Irreg.(Same)	Irreg.(Same)	Reg. +	Irreg.(Same)
Adjusted price							
Garage	1 car	2 Car -	1 Car (Same)	1 Car (Same)	2 Car -	1 Car (Same)	2 Car -
Adjusted Price							
View	Yes	No +	Yes (Same)	No +	Yes (Same)	No +	Yes (Same)
Adjusted Price							
Access	Poor	Poor (Same)	Poor (Same)	Poor (Same)	Good -	Poor (Same)	Good -
Adjusted Price							
Price after adj.							

	Subject	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5	Sale 6
Price	?	\$105,000	\$101,000	\$96,000	\$109,800	\$103,000	\$103,800
Cond of Improv	Good	Good (Same)	Poor	Poor	Good (Same)	Good (Same)	Poor
Adjusted Price			+\$6,000 \$107,000	+\$6,000 \$102,000			+\$6,000 \$109,800
Site shape	Irreg	Reg.	Reg.	Irreg.(Same)	Irreg.(Same)	Reg.	Irreg.(Same)
Adjusted price							
Garage	1 car	2 Car	1 Car (Same)	1 Car (Same)	2 Car	1 Car (Same)	2 Car
Adjusted Price							
View	Yes	No	Yes (Same)	No	Yes (Same)	No	Yes (Same)
Adjusted Price							
Access	Poor	Poor (Same)	Poor (Same)	Poor (Same)	Good	Poor (Same)	Good
Adjusted Price							
Price after adj.							

Example. Comparative Market Analysis

Adjustments

- \$25/sf for building area difference
- \$1,500 for finished basement
- \$500 for deck
- \$5,000 for one-car detached garage

<u>Elements</u>	<u>Subject</u>	<u>Comp 1</u>	<u>Comp 2</u>	<u>Comp 3</u>
Sale Price	-----	\$199,000	\$206,000	\$210,000
Size	1,180sf	1,080sf	1,220sf	1,320sf
Adjustment	-----	\$2,500	(\$1,000)	(\$3,500)
Basement	Unfinished	Unfinished	Unfinished	Finished
Adjustment	-----	-----	-----	(\$1,500)
Deck	Deck	Deck	None	Deck
Adjustment	-----	-----	\$500	-----
Garage	None	None	None	one-car det
Adjustment	-----	-----	-----	(\$5,000)
# of Adjustments		1	2	3
Net Adjustment		+\$2,500	-\$500	-\$10,000
Adjusted Sale Price		\$201,500	\$205,500	\$200,000

Subject Value = \$201,500

Explanation: The subject value is equal to the adjusted sale price for Comparable #1, which had the fewest number of adjustments. The fact that the adjusted sale price for this comparable also fell in between the other two adjusted sale prices provided support for using that value estimate.