



Income Approach

- Three methods to determine:
 - Summation Method (build-up method)
 - Band-of-Investment Method
 - Market Comparison Method





Income Approach

- Recapture Rate – percentage that allows for return of the investment
- The recapture rate is the annual dollar requirement for returning to the investor a sum equal to the value of the improvements at the end of a given period of time. It is the annual offset against the depreciation on the improvements.





Income Approach

- Two methods to determine:
 - Reciprocal of the remaining economic life method
 - Market comparison method





Income Approach

- Effective Tax Rate – percentage that allows for payment of the property taxes on the investment.
- The effective tax rate expresses the ratio between the property value and the current tax bill. Since we do not expense the property taxes in the reconstructed operating statement, they must be accounted for in the capitalization rate.





Income Approach

- Two methods to determine:
 - EAT formula method
 - Market comparison method





Income Approach

- Once we have the three rate components, we can then develop a capitalization rate to use in the IRV formula.
- The capitalization rate we develop must match the income we are capitalizing. In other words, whatever the investor needs to take out of the income, we need to include in the cap rate.





Income Approach

- There are three types of capitalization rates:
 1. Land Cap Rate (R_L) – used when we are capitalizing land income.
 2. Improvement (Bldg.) Cap Rate (R_I) – used when we are capitalizing building/improvement income.
 3. Overall Capitalization Rate (R_O) or (OAR) – used when we are capitalizing the income to the total property.





Income Approach

- Land Cap Rate (R_L) – used when capitalizing land income
- Developed by adding together the Discount Rate and the Effective Tax Rate
- If the Discount rate is 8% and the Effective Tax Rate is 1.2%, the Land Cap Rate would be 9.2% (8% + 1.2%)





Income Approach

- Improvement (Bldg.) Cap Rate (R_i) – used when capitalizing improvement (building) income.
- It is developed by adding together the Discount Rate, the Effective Tax Rate, and the Recapture Rate.





Income Approach

- Example:
 - If the Discount Rate is 8%, the Effective Tax Rate is 1.2% and the Recapture Rate is 2%, the Improvement Cap Rate is 11.2%.

$$(8\% + 1.2\% + 2\% = 11.2\%)$$





Income Approach

- Now, turn to Problem 8, Land and Building Capitalization Rates. Read the information carefully and using the information we just discussed, determine an overall capitalization rate.



Level II
Class Problem # 8
Land and Building Capitalization Rates

You are given the following information:

Discount Rate	9.0%
Mortgage Rate	6.5%
Recapture Rate	2.5%
Effective Tax Rate	1.5%
Nominal Tax Rate	\$3.00 per \$100 of Assessed Value

Calculate a Land Capitalization Rate.

Calculate an improvement/building capitalization rate.



Level II
Class Problem # 8 Answer
Land and Building Capitalization Rates

Calculate a Land Capitalization Rate.

Calculate an improvement/building capitalization rate.

Calculate a Land Capitalization Rate.

Discount Rate	9.0%
Plus Effective Tax Rate	1.5%
Land Cap Rate	<u>10.5%</u>

Calculate an improvement/building capitalization rate.

Discount Rate	9.0%
Plus Effective Tax Rate	1.5%
Plus Recapture Rate	2.5%
Building Cap Rate	<u>13.0%</u>





Income Approach

- Overall Capitalization Rate (R_o) or (OAR) – used when we are capitalizing the income to the total property.
- Developed by weighting the land cap rate and the improvement cap rate by the land-to-building ratio.





Income Approach

- Example:
 - Land-to-building ratio is 1:4 (20% land, 80% building)
 - If the land cap rate is 8% and the building cap rate is 12%, the OAR is calculated as follows:
 - Land Cap Rate = $8\% \times 20\% = 1.6\%$
 - Bldg. Cap Rate = $12\% \times 80\% = 9.6\%$
 - OAR is $1.6\% + 9.6\%$ or 11.2%





Income Approach

- Now turn to Problem 9, Overall Capitalization Rate, Weighted Land and Bldg. Cap Rates. Using the information provided and the previous slide as an example, determine the overall capitalization rate.



Level II
Class Problem # 9
Overall Capitalization Rate
and
Weighted Land and Building Cap Rates

You are given the following information:

Discount Rate	8.0%
Recapture Rate	2.0%
Effective Tax Rate	2.0%
Land to Building Ratio	1:3

Calculate an overall capitalization rate (OAR)



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Class Problem # 9 Answer
Overall Capitalization Rate
and
Weighted Land and Building Cap Rates

You are given the following information:

Discount Rate	8.0%
Recapture Rate	2.0%
Effective Tax Rate	2.0%
Land to Building Ratio	1:3

Calculate an overall capitalization rate (OAR)

Step 1) Calculate a Land Cap Rate:

Discount Rate	8.0%
Plus Effective Tax Rate	2.0%
<hr/>	
Equals Land Cap Rate	10.0%

Step 2) Calculate a building capitalization rate.

Discount Rate	8.0%
Plus Effective Tax Rate	2.0%
Plus Recapture Rate	2.0%
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Equals Building Cap Rate	12.0%

Step 3) Weight the land and building cap rates by the land to building ratio.

Land	1 part	1/4	25.0%
Building	3 parts		75.0%
<hr/>			
Total	4 parts		#####

Land Cap Rate	10.0%	X	25.0%	2.5%
Building Cap Rate	12.0%	X	75.0%	9.0%
<hr/>				
Total Overall Capitalization Rate				<u>11.5%</u>



Income Approach

- A second method of developing an overall cap rate is to determine it directly from the market by analyzing comparable property using the IRV formula.
 - $I \div V = R$
 - $\text{NOI} \div \text{Sale Price} = \text{Overall Rate}$





Income Approach

- For example: Assume that our NOI is \$45,100 and our Sale Price was \$400,000. Our OAR would be 11.275% or 11.3%.
- $\$45,100 \div \$400,000 = 11.275\% \text{ or } 11.3\%$





Income Approach

- Now turn to Problem 10, Overall Capitalization Rate From the Market and determine an overall capitalization rate.



Level II
Class Problem # 10
Overall Capitalization Rate From the Market

You have obtained the following information on properties comparable to the Gateway Shopping Center:

Property	EGI	Total Exp. & RR	Sale Price
Riverton SC	\$ 469,775	\$ 150,330	\$ 2,778,000
Eagle Ridge SC	\$ 392,440	\$ 129,500	\$ 2,307,000
Chatham SC	\$ 518,760	\$ 166,000	\$ 3,065,000
Hyde Park SC	\$ 318,780	\$ 98,820	\$ 1,895,000

Calculate an overall capitalization rate.



Level II
Class Problem # 10 Answer
Overall Capitalization Rate From the Market

Calculate an overall capitalization rate.

Property	EGI	Total Exp. & RR	NOI	Sale Price	OAR
Riverton SC	\$ 469,775	\$ 150,330	\$ 319,445	\$ 2,778,000	11.5%
Eagle Ridge SC	\$ 392,440	\$ 129,500	\$ 262,940	\$ 2,307,000	11.4%
Chatham SC	\$ 518,760	\$ 166,000	\$ 352,760	\$ 3,065,000	11.5%
Hyde Park SC	\$ 318,780	\$ 98,820	\$ 219,960	\$ 1,895,000	11.6%

The Overall Capitalization Rate is:

11.5%





Income Approach

- Once you have the appropriate capitalization rate, it is merely a matter of plugging it into the IRV formula and capitalizing the NOI for the property into an indication of the property's value using the income approach.





Income Approach

- Let's review the IRV formula, it is shown on slide 67:
 - $I \div R = V$
 - $\text{NOI} \div \text{Cap Rate} = \text{Market Value}$
- If the NOI is \$49,500 and the Cap Rate is 11%, the market value is \$450,000.
- $(\$49,500 \div 11\% = \$450,000)$





Income Approach

- Turn to Problem 11, Direct Capitalization, Overall Capitalization Rate.
- Using the answers from Problem 7 and 10, calculate the value of the Gateway Shopping Center.



Level II
Class Problem # 11
Direct Capitalization and Overall Cap Rate

Use the answers from Problems 7 and 10 and calculate the value of the Gateway Shopping Center using direct capitalization in the income approach to value.



Level II
Class Problem # 11 Answer
Direct Capitalization and Overall Cap Rate

Use the answers from Problems 7 and 10 and calculate the value of the Gateway Shopping Center using direct capitalization in the income approach to value.

Answer from Problem # 7:

The subject property's Net Operating Income (NOI) is: \$ 300,628

Answer from Problem # 10:

The Overall Capitalization Rate (OAR) is: 11.5%

Apply the Direct Capitalization Method IRV Formula

$$V = I/R$$

Net Operating Income/Over All Rate = Market Value

$$\$300,628/11.5\% =$$

\$ 2,614,157





Income Approach

- Capitalization methods are different ways of mathematically combining income streams and capitalization rates to arrive at a conclusion of value by the income approach.
- They can be divided into two categories:
 - Direct Capitalization Methods
 - Yield Capitalization Methods (we will not be discussing these)





Income Approach

- **Direct Capitalization Methods**
- Direct capitalization methods use an estimate of one year's income and directly converts it into an indicated value.
 - Uses the IRV or VIF formulas
 - The direct methods are: Overall Capitalization Rates and Gross Income or Gross Rent Multipliers





Income Approach

- We just discussed, and you just determined an overall cap rate, so we are going to spend the rest of the time talking about the Gross Income/Gross Rent Multipliers.





Income Approach

- Gross Income/Gross Rent Multipliers
 - This is also a simple method of capitalization. It uses the VIF formula and converts one year's (or one month's) effective gross income (EGI) into value by multiplying it by a factor.
 - The factor is called a multiplier, and can be either a Gross Income Multiplier (GIM) or a Gross Rent Multiplier (GRM).





Income Approach

- $I \times F = V$
- $EGI \times GIM = \text{Market Value}$
- If our $EGI = \$60,000$ and our $GIM = 7$, the indicated value of our property would be $\$420,000$





Income Approach

- **Gross Income Multipliers (GIM)** are developed for most commercial properties such as office buildings, shopping centers, warehouses, and large apartment complexes.
- **Gross Rent Multipliers (GRM)** are developed for residential properties such as single-family, duplexes, triplexes, etc.





Income Approach

- **Gross Income Multipliers (GIM)** are developed from comparable properties' annual effective gross income and are applied to the subject property's annual effective gross income.





Income Approach

- Gross Rent Multipliers (GRM) are developed from comparable properties' monthly effective gross income and are applied to the subject property's monthly effective gross income.





Income Approach

- Gross Income Multipliers (GIM) Formula:
 - $\text{Sale Price} \div \text{Annual EGI} = \text{GIM}$
- Example:
 - Comp #1 $\$420,000 \div \$70,000 = 6.0$
 - Comp #2 $\$520,000 \div \$88,100 = 5.9$
 - Comp #3 $\$630,000 \div \$103,300 = 6.1$





Income Approach

- This tells us that investors are paying approximately six (6) times the annual effective gross rent for these properties.





Income Approach

- Gross Income Multiplier Application:
 - $I \times F = V$
 - Annual EGI \times GIM = Market Value
- Example:
 - Subject property's annual EGI is \$90,000, and the GIM is 6.
 - The indicated market value would be \$540,000 ($\$90,000 \times 6 = \$540,000$)





Income Approach

- Gross Rent Multiplier (GRM) Formula:
- $\text{Sale Price} \div \text{Monthly EGI} = \text{GRM}$
- Example:
 - Comp #1 $\$48,000 \div \$450 = 106.7$
 - Comp #2 $\$50,500 \div \$470 = 107.4$
 - Comp #3 $\$53,000 \div \$495 = 107.1$





Income Approach

- This tells us investors are paying approximately one hundred seven (107) times the monthly effective gross rent for these properties.





Income Approach

- Gross Rent Multiplier (GRM) application:
- $I \times F = V$
- Monthly EGI x GRM = Market Value

- Subject property's monthly EGI is \$500 and the GRM is 107.
- The subject property's indicated market value is \$53,500 (\$500 x 107)





Income Approach

- Now turn to Problem 12, Direct Capitalization, Gross Income Multiplier.
- Using the information in Problems 3 and 10, calculate a gross income multiplier and determine the value of the subject property.



Level II
Class Problem # 12
Direct Capitalization Vs. Gross Income Multiplier

Using the EGI arrived at in Problem # 3 and the chart below from problem # 10, calculate a Gross Income Multiplier (GIM) and determine the value of the subject property using Direct Capitalization in the Income Approach.

Then compare this answer to the one you arrived at in Problem # 11:

Property	EGI	Total Exp. and RR	Sale Price
Riverton SC	\$469,775	\$150,330	\$2,778,000
Eagle Ridge SC	\$392,440	\$129,500	\$2,307,000
Chatham SC	\$518,760	\$166,000	\$3,065,000
Hyde Park SC	\$318,780	\$98,820	\$1,895,000



Level II
Class Problem # 12 Answer
Direct Capitalization Vs. Gross Income Multiplier

Using the EGI arrived at in Problem # 3 and the chart below from problem # 10, calculate a Gross Income Multiplier (GIM) and determine of the value of the subject property using Direct Capitalization in the Income Approach.

Information from Problem # 10:

Property	EGI	Total Exp. and RR	Sale Price
Riverton SC	\$469,775	\$150,330	\$2,778,000
Eagle Ridge SC	\$392,440	\$129,500	\$2,307,000
Chatham SC	\$518,760	\$166,000	\$3,065,000
Hyde Park SC	\$318,780	\$98,820	\$1,895,000

Calculation of Gross Income Multiplier (GIM): $GIM = \text{Sale Price} / \text{Annual EGI}$

Property	Sale Price	EGI	GIM
Riverton SC	\$2,778,000	\$469,775	5.9
Eagle Ridge SC	\$2,307,000	\$392,440	5.9
Chatham SC	\$3,065,000	\$518,760	5.9
Hyde Park SC	\$1,895,000	\$318,780	5.9

The Gross Income Multiplier in this problem would be 5.9

Now apply the VIF formula:

EGI Times GIM = Market Value

\$442,100 times 5.9 =

\$2,608,390

Now compare this answer to the one arrived at in Problem # 11:

\$2,614,157



Level II
Practice Problem # 1 PGI-EGI-NOI

You have obtained the following information:

A building has total of 40,000 Square Feet. There is 8,000 Square Feet of common area. Market rent is currently \$20.00 per square foot of net leasable area. The Vacancy and Collection Loss Rate is 6%. The Operating Expense and the Reserves for Replacements is at 18%. The Overall Capitalization Rate is 10%.

You are to develop the Potential Gross Income (PGI), the Effective Gross Income (EGI), and the Net Operating Income (NOI). Once you have done that, calculate an estimate of value for this property.



Level II

Practice Problem # 1 PGI-EGI-NOI Answer

You are to develop the Potential Gross Income (PGI), the Effective Gross Income (EGI), and the Net Operating Income (NOI). Once you have done that, calculate an estimate of value for this property.

Potential Gross Income		\$640,000
Vacancy and Collection Loss		-\$38,400
Misc Income		0
Effective Gross Income		\$601,600
Operating Expenses & RR		-\$108,288
Net Operating Income		\$493,312

COMPUTATION OF PGI, EGI, AND NOI FOR ABOVE PROBLEM

PGI	32,000	\$20	\$640,000
V and C	\$640,000	6%	-\$38,400
Misc Income	\$0		0
Effective Gross Income			\$601,600
Operating Expenses & RR	\$601,600	18%	-\$108,288
Net Operating Income			\$493,312

THE INCOME FROM ABOVE IS	\$493,312
Overall Capitalization Rate	10%
Estimate of value using the IRV formula	\$4,933,120



Level II
Practice Problem # 2
Development of NOI and Overall Cap Rate

Potential Gross Income	\$150,000
Vacancy and Collection Loss	10%
Operating Expense	\$25,000
Christmas Gift	\$2,500
Property Value	\$800,000
Loan to value ratio	0.4

The above is given to you. Develop the NOI and the Overall Capitalization Rate.



Level II
Practice Problem # 2 Answer
Development of NOI and Overall Cap Rate

Potential Gross Income	\$150,000
Vacancy and Collection Loss	10%
Operating Expense	\$25,000
Christmas Gift	\$2,500
Property Value	\$800,000
Loan to value ratio	0.4

The above is given to you. Develop the NOI and the Overall Capitalization Rate.

Net operating Income	\$110,000
Overall Cap Rate	13.8%

DEVELOPMENT OF NET OPERATING INCOME

PGI	\$150,000
V & C Loss	-\$15,000
Misc Inc	\$0
Effective Gross Income	\$135,000
Operating Expense	-\$25,000
Net operating Income	\$110,000



Level II
Practice Problem # 3
Expense Ratio Problem

You have obtained the following information. Develop an Expense Ratio for the subject property based on this market information. What expense ratio will you use for your subject property?

Office Bldg.	EGI	Expenses	Reserves	Total Exp	Exp Ratio
Uptown	\$ 468,230	\$ 134,220	\$ 15,000		
River Edge	\$ 393,450	\$ 118,200	\$ 12,000		
East Lake	\$ 522,030	\$ 147,500	\$ 18,000		
Forest Glen	\$ 319,500	\$ 88,120	\$ 10,800		



Level II
Practice Problem # 3 Answer
Expense Ratio Problem

What expense ratio will you use for your subject property?

Office Bldg.	EGI	Expenses	Reserves	Total Exp	Exp Ratio
Uptown	\$ 468,230	\$ 134,220	\$ 15,000	\$ 149,220	31.9%
River Edge	\$ 393,450	\$ 118,200	\$ 12,000	\$ 130,200	33.1%
East Lake	\$ 522,030	\$ 147,500	\$ 18,000	\$ 165,500	31.7%
Forest Glen	\$ 319,500	\$ 88,120	\$ 10,800	\$ 98,920	31.0%

Total Expense
Ratio 31.8%



Income Approach
Practice Problem # 4 (A)
Gross Rent and Gross Income Multipliers

Gross Rent Multiplier Problem

The subject property is a single family dwelling which is rented for \$475 per month. The market rent is also \$475 per month. Develop a GRM from the following data and use it to calculate a possible indication of value.

Sales

	1	2	3	4	5	6
Sale Price	\$ 60,000	\$ 72,000	\$ 65,000	\$ 62,000	\$ 68,000	\$ 70,000
Monthly Rent (EGI)	\$ 425	\$ 520	\$ 460	\$ 450	\$ 490	\$ 500
GRM						



Income Approach
Practice Problem # 4 (A) Answer
Gross Rent and Gross Income Multipliers

Gross Rent Multiplier Problem

The subject property is a single family dwelling which is rented for \$475 per month. The market rent is also \$475 per month. Develop a GRM from the following data and use it to calculate a possible indication of value.

	<u>Sales</u>					
	1	2	3	4	5	6
Sale Price	\$ 60,000	\$ 72,000	\$ 65,000	\$ 62,000	\$ 68,000	\$ 70,000
Monthly Rent (EGI)	\$ 425	\$ 520	\$ 460	\$ 450	\$ 490	\$ 500
GRM	141	138	141	138	139	140

GRM = Sales Price divided by the Monthly Rent (EGI)

Median is 140

Possible indication of value: Market rent of \$475 times 140 = \$66,500



Practice Problem # 4 (B)
Gross Income Multiplier Problem

The subject property produces Gross Annual Effective Gross Income of \$72,000. Analysis of rents and sales of comparable properties rendered the following. Based upon this information calculate a Gross Income Multiplier (GIM) and then calculate an indication of value for the subject property.

Sale	Sale Price	EGI	GIM	Range
1	\$ 675,000	\$ 75,000		
2	\$ 600,000	\$ 68,000		
3	\$ 720,000	\$ 85,700		
4	\$ 750,000	\$ 87,500		
5	\$ 650,000	\$ 73,000		

Estimated value of subject property:

Value using Median

Value using Low range

Value using High range



Practice Problem # 4 (B) Answer
Gross Income Multiplier Problem

The subject property produces Gross Annual Effective Gross Income of \$72,000. Analysis of rents and, sales of comparable properties rendered the following. Based upon this information calculate a Gross Income Multiplier (GIM) and then calculate an indication of value for the subject property.

Sale	Sale Price	EGI	Gross Income Multiplier	Range
1	\$ 675,000	\$ 75,000	9.0	8.4
2	\$ 600,000	\$ 68,000	8.8	8.6
3	\$ 720,000	\$ 85,700	8.4	8.8
4	\$ 750,000	\$ 87,500	8.6	8.9
5	\$ 650,000	\$ 73,000	8.9	9.0

GIM = Sale Price divided by the median EGI

Possible indicated range of value:

Subject property EGI of \$72,000 times low range =

Subject property EGI of \$72,000 times high range =

Subject property EGI of \$72,000 times median range 8.8 =

\$604,800
\$648,000
\$633,600





Income Approach

- This concludes the Income Approach tutorial and is a reminder that should you have questions you can email these questions to the DLGF.
- Please send emails to Level2@dlgf.in.gov.

