

FINANCE 673
REAL PROPERTY VALUATION

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Direct Capitalization

Practice Problems Set 2

Solutions

1. *Based on the following information, what is the building capitalization rate?*

Land value	\$650,000
Net operating income	\$276,000
Land capitalization rate	10%
Overall capitalization rate	12%

$$V_o = \frac{\$276,000}{0.1200} = \$2,300,000$$

$$I_L = (0.1000) (\$650,000) \\ = \$65,000$$

$$I_B = \$276,000 - \$65,000 \\ = \$211,000$$

$$R_b = \frac{\$211,000}{\$1,650,000} \\ = 0.1279$$

2. Given:

I_O	\$220,000
R_E	0.0800
M	0.80
R_M	0.1000

A. *What is R_O ?*

$$\begin{aligned}R_O &= (0.8)(0.1000) + (0.2)(0.0800) \\ &= 0.0960\end{aligned}$$

B. *What is value?*

$$\begin{aligned}V_O &= \frac{\$220,000}{0.0960} \\ &= \$2,291,667\end{aligned}$$

C. *Show proof that your answers are correct.*

$$\begin{aligned}I_M &= (\$2,291,667)(0.8)(0.1000) \\ &= \$183,333\end{aligned}$$

$$\begin{aligned}I_E &= \$220,000 - \$183,333 \\ &= \$36,667\end{aligned}$$

$$\begin{aligned}R_E &= \frac{\$36,667}{\$458,333} \\ &= 0.0800\end{aligned}$$

3. **Equity investors expect a capitalization rate (R_E) of 7%. Current terms are 75% debt with a constant of 9%.**

What is R_O ?

$$\begin{aligned} R_O &= (0.75)(0.0900) + (0.25)(0.0700) \\ &= 0.0850 \end{aligned}$$

4. **Given:**

I_O	\$75,000
Loan amount	\$470,000
R_M	0.1000
R_E	0.0900

What is property value?

$$\begin{aligned} I_E &= \$75,000 - (\$470,000)(0.1000) \\ &= \$28,000 \end{aligned}$$

$$\begin{aligned} V_E &= \$28,000 / 0.0900 \\ &= \$311,111 \end{aligned}$$

$$\begin{aligned} V_O &= V_M + V_E \\ &= \$470,000 + \$311,111 \\ &= \$781,111 \end{aligned}$$

5. A property had net operating income of \$24,000 and sold for \$175,000. Annual debt service was \$17,500.

What was the R_o ?

$$\begin{aligned} R_o &= \frac{\$24,000}{\$175,000} \\ &= 0.1371 \end{aligned}$$

6. A. Given a minimum *DCR* of 1.15, a loan constant of 0.10, a loan-to-value ratio of 0.70, and net operating income of \$90,000, *estimate the value of the property.*

$$V_o = \frac{I_o}{R_o}$$

$$\begin{aligned} R_o &= (DCR)(R_M)(M) \\ R_o &= (1.15)(0.10)(0.70) \\ R_o &= 0.0805 \end{aligned}$$

$$V_o = \frac{I_o}{R_o}$$

$$V_o = \frac{90,000}{0.0805} = \$1,118,012$$

- B. *Show proof that your estimate is correct.*

$$\begin{aligned} I_M &= (V_o)(M)(R_M) \\ I_M &= (\$1,118,012)(0.70)(0.1000) \\ &= \$78,261 \end{aligned}$$

$$\begin{aligned} DCR &= \frac{\$90,000}{\$78,261} \\ &= 1.15 \end{aligned}$$

- C. *What is R_E ?*

$$\begin{aligned} R_E &= \frac{\$90,000 - \$78,261}{\$1,118,012 (0.3)} \\ &= 0.0350 \end{aligned}$$

7. Given:

20-unit apartment building	
Average monthly rent	\$600
Vacancy rate	7%
OER	35% of EGI
Expected EGIM	7.5
Loan-to-value ratio	0.70

A. What is expected I_o ?

PGI	$\$600 \times 20 \times 12$	\$144,000
Vacancy	(0.07)	<u>10,080</u>
EGI		\$133,920
OER	(0.35)	<u>46,872</u>
I_o		\$ 87,048

B. What is V_o ?

$$(\$133,920) (7.5) = \$1,004,400$$