

Real Estate Appraisal Fall 2004

Midterm 1 – Solutions

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MW 5:35-6:50

You should be able to answer all of the questions I list below.

1) (20 points) Dopey recently entered into a 99-year ground lease on land owned by Grumpy. The present value of the rent from this ground lease is \$3 million. Dopey develops a shopping center on the property that costs \$8 million to construct. Based on the market rent this center will command, the total market value of this property is \$12 million.

a) Given the above information, how much of the property's value can be attributed to the land and how much to the building?

The cost of the building is \$8 million; all residual value accrues to the land, so the value of the land is \$4 million.

b) What is the value of Grumpy's leased fee interest? What is the total value of the interests owned by Grumpy?

Grumpy's leased fee interest is worth \$3 million, the present value of the payments on the ground lease. This is the total value of all interests he owns.

c) What is the total value of Dopey's interests? Indicate the value of each specific interest Dopey holds.

Dopey has a leasehold interest worth \$1 million, the difference between the \$4 million value of the land and the \$3 million value of the rent on the ground lease. Dopey's building is worth \$8 million, bringing the total value of his interests to \$9 million.

d) Suppose now that market rents fall so that the total property value is \$10 million. What is the new value of the following interests:

- Building value

The total building value is still worth \$8 million.

- Total land value

The land value has dropped to \$2 million, because it is the residual.

- Leased fee interest

This is still worth \$3 million, because the rents on the ground lease have not changed.

- Leasehold interest

This is now worth – \$1 million, the difference between the land value and the value of the leased fee interest. This is because the ground lease payments do not change.

- Total of all interests owned by Dopey
Dopey's interest is now worth \$7 million = \$8 million for the building and the – \$1 million leasehold interest.
- Total of all interests owned by Grumpy
Grumpy's interest is still worth \$3 million.

2) (20 points) Doc is analyzing a commercial office building investment. The building has 85,000 square feet of gross leasable area. Of this, 25,000 square feet rent for \$22.50 per square foot (psf) while the remaining 60,000 square feet rent for \$21.00 psf. All leases in this building are gross leases. Currently, the average vacancy rate for similar office space 8%. The asking price for this property is \$5.6 million.

Annual operating expenses are expected to be as follows:

Depreciation	\$128,000
Utilities	245,000
Maintenance	185,000
Management expenses	5% of EGI
Property insurance	232,185
Mortgage interest	185,000
Property taxes	260,000

a) Write out the pro forma operating statement for this property. What is its expected net operating income?

Potential gross income		
25,000 @ 22.50	\$562,500	
60,000 @ 21.00	1,260,000	1,822,500
Less: Vacancy & collection		(145,800)
Effective gross income		1,676,700
Operating expenses		
Utilities	245,000	
Maintenance	185,000	
Management expenses	83,835	
Property insurance	232,185	
Property taxes	260,000	(1,006,020)
Net operating income		\$670,680

b) At what cap rate is the seller offering this property?

$$R = \text{NOI} / V = 670,680 / 5,600,000 = 11.98\%$$

c) Similar office buildings have recently been selling at an 11 percent cap rate. Based solely on a comparison of cap rates, does this appear to be a good investment at the current asking price? Explain.

Based solely on its cap rate, this does appear to be a good investment. For the price you must pay, the income it is generating annually is relatively high compared to other office properties in the market. In other words, if you

purchased a different office building in the market you would not expect to receive \$670,680 in income from your \$5.6 million investment.

- d) Provide two reasons why the cap rate may be a misleading indicator of the property's true value as an investment. For each reason, provide a specific scenario that would change your answer to part (c) above, and explain how that scenario would change the analysis.

Cap rates only consider first year net operating income. If the income generated by this property were expected to grow at a slower rate than other properties in the market, it would be expected to sell at a higher cap rate than other properties.

Cap rates do not fully account for a property's risk. If this building is in an inferior location with low-credit tenants, then this property might also command a lower than typical price (e.g., a higher cap rate).

- e) If Doc were to buy this property at an 11 percent cap rate, what price would he pay?

To obtain an 11 percent cap rate, Doc would need to purchase the property at $V = NOI / R = 670,680 / 0.11 = \$6,097,091$.

- 3) (20 points) Sneezzy is considering investing in a property that has a first-year expected NOI of \$400,000; this figure is expected to increase by 3 percent per year for the indefinite future. At the end of 5 years, Harold expects to sell the property at a 12 percent terminal cap rate. Harold's required rate of return on this investment is 15 percent. The asking price for this investment is \$3 million.

- a) Write out the expected total cash flows from this investment over Sneezzy's expected holding period.

<u>Year</u>	<u>Annual Cash Flow</u>	<u>Reversion</u>	<u>Total Cash Flow</u>
1	\$400,000		\$400,000
2	412,000		412,000
3	424,360		424,360
4	437,091		437,091
5	450,204	\$3,864,247	\$4,314,450
6	463,710		

- b) If Sneezzy pays the asking price, what is his going-in cap rate?

$$R = \frac{\$400,000}{\$3,000,000} = 13.33\%$$

- c) What is the net present value of this investment?

Using the above cash flows with a 15 percent discount rate, the present value of this investment is \$3,333,333. Thus, the NPV of this investment is $\$3,333,333 - \$3,000,000 = \$333,333$.

- d) What is the IRR of this investment?

$$IRR = 18.04\%.$$

e) What is the profitability index of this investment?

$$PI = \frac{\$3,333,333}{\$3,000,000} = 1.11.$$

f) What is the net income multiplier for this investment?

$$NIM = 1 / R = 7.5$$

- 4) (10 points) What is the most important physical characteristic of real estate? Explain briefly why this is true. What other characteristics of real estate arise as a result of this one?
- 5) (15 points) Briefly explain the idea behind each of the following principles of value listed below and provide a specific example of a local parcel whose value is affected by that principle.
- Anticipation
 - Conformity
 - Contribution
- 6) (15 points) Define market value as it is used in real estate appraisals.
- What key assumptions lie behind this definition?
 - Explain briefly why the following values may differ from market value:
 - Investment value
 - Value in use
 - Cost