

RE 614 – Real Estate Appraisal
Fall 2008

Homework 2 – Land Values as Residual and Highest & Best Use – Due Sept. 18

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TTh 9:30-10:45

1) Brian recently entered into a 99-year ground lease on land owned by Larry. The present value of the rent from this ground lease is \$2 million. Brian develops an office building on the property that cost \$5 million to construct. Based on the market rent this office building will command, the total market value of this property is \$8 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?

$$V = \$8 \text{ million}; B = \$5 \text{ million (construction cost)}$$

$$L = V - B = \$3 \text{ million}$$

b) What is the value of Larry's leased fee interest? Why isn't this simply the value of the land?

$$LF = \$2 \text{ million (present value of ground lease payments to Larry)}$$

The value of Larry's leased fee (LF) interest is based on the cash flows he expects to receive from leasing the land. The remaining value of the land accrues to the leasehold interest owned by Brian.

c) What is the value of Brian's leasehold interest? What is the total value of the interests owned by Brian?

Total land value (L) is divided between the leasehold (LH) interest and the leased fee (LF) interest.

$$LH = L - LF = \$3 \text{ million} - \$2 \text{ million} = \$1 \text{ million}$$

Thus, the total value of Brian's interests is $B + LH = \$5 \text{ million} + \$1 \text{ million} = \$6 \text{ million}$

d) Suppose now that market office rents rise so that the total property value is \$9 million. How does this change affect the value of the following interests:

- Building value

$$\text{No change; } B = \$5 \text{ million}$$

- Total land value

$$L = V - B = \$4 \text{ million}$$

- Leased fee interest

$$\text{No change; } LF = \$2 \text{ million}$$

- Leasehold interest

$$LH = L - LF = \$2 \text{ million}$$

- Total of all interests owned by Brian

$$\text{Brian's interests} = B + LH = \$5 \text{ million} + \$2 \text{ million} = \$7 \text{ million}$$

- Total of all interests owned by Larry

$$\text{Larry's interests} = LF = \$2 \text{ million}$$

- 2) Consider a property that is zoned for industrial uses. The current use of the property is an older, 100,000 square foot warehouse, which generates \$250,000 per year in net operating income (NOI).

An appraiser has determined that in addition to the current use, there are two other potential uses that are physically possible and legally permissible for the site. The first is a new 150,000 square foot office/warehouse building. The second is a 125,000 square foot light manufacturing building. Relevant information about the three possible uses is provided in the table below:

	100k sf Old <u>Warehouse</u>	150k sf New <u>Warehouse</u>	125k sf New <u>Light Mfg. Bldg.</u>
Construction cost	\$20 psf	\$35 psf	\$40 psf
NOI	\$250,000	\$600,000	\$500,000
Market cap rate	12%	10%	8.5%

Recall that the market value of a property can be estimated by dividing the net operating income (NOI) by the cap rate (R).

- a) Calculate the highest-and-best use of this site as though vacant.

	100k sf Old <u>Warehouse</u>	150k sf New <u>Warehouse</u>	125k sf New <u>Light Mfg. Bldg.</u>
Total value in use	\$2,083,333	\$6,000,000	\$5,882,353
Building value	<u>2,000,000</u>	<u>5,250,000</u>	<u>5,000,000</u>
Land value	\$83,333	\$750,000	\$882,353

The highest-and-best use of the site if vacant is the light manufacturing building.

- b) Under the current use (100,000 sf warehouse), what is the total value of the property, the value of the building and the value of the land?

The total value in use is \$2,083,333 as calculated above. The land value is the value in the highest-and-best use, or \$882,353. Thus, the building value is $\$2,083,333 - \$882,353 = \$1,200,980$. This is less than the \$2 million construction cost of the building because it is the “wrong” building for the site. This economic obsolescence is attributable to the building, not the land value.

- c) Suppose that it would cost \$500,000 to demolish the existing building and prepare the site for new construction. Explain why the highest and best use as improved is now the current use (100,000 sf warehouse). What would need to be true in order for the highest-and-best use as improved to be the same as your answer from part (a) above?

In order for an alternative use to be better than the current use, it must be that the *land* value from the alternative use is greater than the *total* value under the current use plus any costs of demolition and site preparation.

The land value under the light manufacturing use is \$882,353. This is less than the \$2,583,333 it would cost to acquire and prepare the site given its current use. Thus, the highest-and-best use as improved is the current use (100,000 sf warehouse).

For this to change, the total value of the current use would have to drop below \$382,353 (= \$882,353 – \$500,000). Alternatively, the land value under the alternative use would have to rise to at least \$2,583,333. If this happened, it would then pay for an investor to buy the property under its current use, tear down the existing building, and build a light manufacturing building in its place.