

Question #1 of 45

An investor in rental apartments is evaluating the acquisition of an older apartment building. The investor contacts a local builder for an estimate for constructing a property that would house a similar number of renters and generate an amount of rental income comparable to that of the subject property being appraised. In valuing the subject property, the investor is most likely using the:

In valuing the subject property, he is *most likely* using the:

A) Cost approach



B) Income approach



C) Sales comparison approach



Explanation

The cost approach involves an analysis of how much it would cost to buy land and construct a new property that provides the same function as the subject property being appraised. The sales comparison approach simply compares the sales price (after appropriate adjustments) estimated using recent transactions of comparable properties. The income approach estimates the value of a property based on estimated income generated by the property.

(Study Session 15, Module 42.2, LOS 42.e)

Related Material

[SchweserNotes - Book 5](#)

Question #2 of 45

Which of the following *least accurately* describes a major category of due diligence factors that should be investigated in determining the value of a property?

A) Pipeline analysis.



B) Operating expenses.



C) Structural integrity.



Explanation

The major due diligence factors that are likely to affect the value of a property include: operating expenses; structural integrity; environmental issues; leases and lease history; lien, ownership, and property tax history; and compliance with relevant regulations and laws.

(Study Session 15, Module 42.1, LOS 42.I)

Related Material

[SchweserNotes - Book 5](#)

Question #3 of 45

A real estate investment is expected to have cash flows after taxes in each of the next three years equal to CAD70,000, CAD50,000, and CAD65,000, respectively. The initial equity investment in this property is CAD600,000 and the equity at the end of year-three is estimated to be CAD300,000. Assuming a required return on equity of 8 percent, the net present value (NPV) for this investment is *closest* to:

A) -CAD202,569.



B) CAD220,360.



C) -CAD238,150.



Explanation

$$PVCF_1 = \frac{70,000}{1.08} = 64,814.81$$

$$PVCF_2 = \frac{50,000}{(1.08^2)} = 42,866.94$$

$$PVCF_3 = \frac{65,000}{(1.08^3)} = 51,599.09$$

$$PV_{ER} = \frac{300,000}{(1.08^3)} = 238,149.67$$

$$NPV = -600,000 + 64,814.81 + 42,866.94 + 51,599.09 + 238,149.67$$

$$= -CAD202,569.48$$

Or, using your TI BAIL Plus: [CF] [2nd] [CLR WORK]

600,000 [+/-] [ENTER] [↓]

70,000 [ENTER] [↓] [↓]

50,000 [ENTER] [↓] [↓]

365,000 [ENTER] [↓] [↓] (note: CF3 = 65,000 + 300,000)

[NPV] {8} [ENTER] [↓]

[CPT] = -CAD202,569.48

(Study Session 15, Module 42.5, LOS 42.m)

Related Material

[SchweserNotes - Book 5](#)

Question #4 of 45

Suppose that a property has a gross annual income equal to \$150,000, and that a comparable property has a gross annual income of \$100,000 and a market value of \$1,125,000. The gross income multiplier approach produces a market value for this property that is *closest* to:

A) \$1,333,333.



B) \$1,687,500.



C) \$1,625,000.



Explanation

Gross income multiplier technique: $MV = \text{gross income} \times \text{income multiplier}$.

$$MV = \$150,000 \times 11.25 = \$1,687,500$$

(Study Session 15, Module 42.3, LOS 42.g)

Related Material

[SchweserNotes - Book 5](#)

Question #5 of 45

Assume that a property has an estimated net operating income (NOI) equal to \$150,000. Further assume that comparable properties have a capitalization rate of 11%. The direct income capitalization approach provides a market value for this property that is *closest* to:

A) \$1,500,000.



B) \$13,636,363.



C) \$1,363,636.



Explanation

$$MV = \frac{NOI}{C} = \frac{150,000}{0.11} = \$1,363,636$$

(Study Session 15, Module 42.2, LOS 42.g)

Related Material

[SchweserNotes - Book 5](#)

Question #6 of 45

Which of the following statements is *most accurate* regarding real estate capitalization rates?

A) Generally, as interest rates increase, capitalization rates increase and value estimates decline.



B) As the difference between the required return on equity capital and the growth rate in NOI (g) increases, value estimates will also increase.



C) If during periods of rising inflation, there is an increase in net operating income (NOI) and the growth rate of NOI, capitalization rates and value estimates will



Explanation

$$MV = \frac{NOI}{r - g} = \frac{NOI}{C}$$

where:

MV = estimated market value

NOI = the net operating income from a real estate investment.

r = the rate that equity investors require from a real estate investment.

g = the growth rate of NOI (assumed to be constant).

$C = r - g$ = the market capitalization rate.

From this relationship, we see that:

- as the growth rate of NOI increases, capitalization rates decline and value estimates will rise,
- the capitalization rate is the spread between r and g . Thus, as the spread widens, value estimates decline, and
- holding r constant, value is directly related to g .

The effect of inflation on value estimates depends on its combined effect on the required return (r) and the growth rate (g). If the net result is to decrease (increase) the capitalization rate, value estimates will rise (fall).

(Study Session 15, Module 42.2, LOS 42.f)

Related Material

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Question #7 of 45

Which of the following *most accurately* identifies non-core (i.e., high-risk) income-producing real estate property types?

A) Retail and multi-family residential.



B) Office and industrial.



C) Hotel and hospitality.

**Explanation**

Hospitality properties such as hotels represent relatively risky investments because these properties do not use long-term leases and their performance may be highly correlated with the business cycle. The core commercial income-producing real estate property types are retail, multi-family, office, industrial and warehouse. These "core" property types are the main properties used to create a low-risk real estate portfolio.

(Study Session 15, Module 42.1, LOS 42.d)

Related Material

[SchweserNotes - Book 5](#)

Question #8 of 45

If the costs of debt financing are greater than the return on a real estate investment, then it is *most likely* that the:

- A) value of the property is lower.
- B) use of leverage decreases equity returns.
- C) discount rate is less than the cap rate.



Explanation

If debt costs are higher than investment returns, then the use of leverage will lower the investment returns as the cost of capital has increased. Debt financing is usually chosen to lower the cost of capital - magnifying the returns to equity investors. The value of property is not determined by the financing choice. The discount rate cannot be less than the cap rate (assuming normal growth projections).

(Study Session 15, Module 42.1, LOS 42.c)

Related Material

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Question #9 of 45

A real estate investment is expected to have cash flows after taxes in each of the next three years equal to CAD70,000, CAD50,000, and CAD65,000, respectively. The initial equity investment in this property is CAD600,000 and the equity at the end of year three is estimated to be CAD500,000. The internal rate of return (IRR) for this investment is *closest* to:

- A) 5.0%.



B) 8.0%.



C) -7.8%.



Explanation

Using your TI BAII Plus:

[CF] [2nd] [CLR WORK]

600,000 [+/-] [ENTER] [↓]

70,000 [ENTER] [↓] [↓]

50,000 [ENTER] [↓] [↓]

565,000 [ENTER] [↓][↓] (note: CF3 = 65,000 + 500,000)

[IRR] [CPT] = 5.0056 percent

(Study Session 15, Module 42.5, LOS 42.m)

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Question #10 of 45

Demand for which real estate type is most affected by foreign trade:

A) Industrial



B) Office



C) Retail



Explanation

Demand for industrial properties are most affected by level of industrial activity in the economy (evidenced by import-export activity). Demand for retail real estate is most influenced by consumer spending and demand for office properties is most influenced by job growth.

(Study Session 15, Module 42.1, LOS 42.d)

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Question #11 of 45

An appraiser who wishes to value an unusual property is *most likely* to estimate the value of the property using the:

A) cost approach.



B) income approach.



C) sales comparison approach.



Explanation

Three main methods are used by appraisers to estimate value: cost, income, and sales comparison. The cost approach is based on replacement cost, and is usually used for unusual properties for which comparable market prices are not available. The sales comparison approach estimates a property's value based on what comparable properties are selling for. The income approach uses net operating income to value a property.

(Study Session 15, Module 42.2, LOS 42.e)

Related Material

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Question #12 of 45

In appraising a commercial property, both the direct capitalization method and the discounted cash flow methods are *most likely* to use as a primary input the:

A) gross income multiplier.



B) terminal cap rate.



C) net operating income.



Explanation

Both the direct capitalization method and the discounted cash flow methods focus on net operating income (a proxy for cash flow) as a key input to the value of a property. In the DCF method, future operating income is discounted to generate a present value. In the direct capitalization method, current NOI is capitalized using the cap rate. An alternative form of direct capitalization uses a gross income multiplier. Terminal valuation under a DCF methodology may use terminal cap rate based on expected NOI at some future horizon. However, this is not used under direct capitalization (of first year NOI).




(Study Session 15, Module 42.3, LOS 42.h)

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Question #13 of 45

All of the following are limitations to the gross income multiplier approach for real estate valuation EXCEPT:

- A) sales prices for comparable properties may not be current. 
- B) gross rental income may be inappropriate when building-to-land ratios are different among otherwise comparable properties. 
- C) it may be difficult to obtain the necessary data to determine the appropriate capitalization rate. 

Explanation

The gross income multiplier approach does not use a capitalization rate.




(Study Session 15, Module 42.2, LOS 42.f)

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Question #14 of 45

Assume that a property that you are evaluating has a gross annual income equal to \$230,000, and that comparable properties are selling for 10.5 times gross income. The gross income multiplier approach provides a market value for this property that is *closest* to:

- A) \$2,415,000. 
- B) \$2,190,000. 
- C) \$2,303,000. 

Explanation

Gross income multiplier technique: $MV = \text{gross income} \times \text{income multiplier}$.

$$MV = \$230,000 \times 10.5 = \$2,415,000$$

(Study Session 15, Module 42.3, LOS 42.g)

Related Material

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Spanos Klios analyzes investment opportunities for Central Europe Securities. Klios is considering proposals by several of the firm's junior analysts.

Josef Klein, one of the junior analysts, proposes a real estate project in Stuttgart and has put together a comprehensive packet on the project. Klein is optimistic about the potential apartment buildings because it is located in an area densely populated with high-income residents. Klios finds the proposal intriguing, but is worried about the equity needed to make the deal work. Most Central European properties' loan-to-values (LTV) are usually below 80% and Klein's project would require borrowing 60% of the value.

Klios calls Klein in for a conference and asks him some questions about the real estate proposal, including the different ways to value the properties. During the meeting, Klios takes notes based on Klein's findings:

- The market value of the land using comparables is €1.25 billion. The total area is 2.5 million square feet.
- Replacement cost and developer's profit is €630.00 per square foot. Curable deterioration is €10.0 million; total economic life is 75 years and effective age is 15 years. All estimated obsolescence costs are €50.0 million.
- The expected purchase price is €2.35 billion and the expected selling price in 10 years is €2.80 billion. The debt value owed on the mortgage value in 10 years is €909,893,015.
- The expected net operating income for next year is €264 million and the debt service is expected to be \$121,220,135. No growth is expected in NOI or debt service during the 10-year holding period.
- Klein found three comparable properties. Information related to each property are as follows:
 - Property A – net operating income, €192 million; market value, €1.60 billion.
 - Property B – net operating income, €550 million; market value, €5.50 billion.
 - Property C – net operating income, €715 million; market value, €6.50 billion.

After Klios finishes his meeting with Klein, he turns his attention to a proposal from Carlotta Graccos. She is proposing a venture-capital investment in two firms; retail group Belgarrique and the KinderWerks toy company. Klios reviews a fact sheet prepared by Graccos, considering a number of factors relating to both companies:

	Belgarrique	KinderWerks
Management	Experienced	Strong leader, minimal experience
Best sales strategy	Auction	Private deals

Working capital needs	Moderate	High
Company financing	Private	Public
Exit strategy	Terms specified in contract	Uncertain
Company's chief goals	Cash-flow targets, market expansion	Market-share targets
Risk	Measurable	Difficult to measure

Klios knows most venture capital proposals are risky, and he has several preferred methods to account for unusual risks. In this case, he wants to address the possibility that either or both of the companies under consideration might produce substantially lower profits than expected, as well as the chance that they might declare bankruptcy.

After reviewing the proposal from Graccos, Klios considers Svetlana Nordqvist's recommendation of several hedge funds. Klios reads the proposal, but is concerned about whether the junior analyst has adequately considered the risks of the securities. He is concerned that the stated standard deviation inadequately captures the risk of investing in these funds.

Question #15 of 45

The estimated value of the apartment building project using the cost approach is *closest to*:

A) €2.45 billion.



B) €2.95 billion.



C) €1.20 billion.



Explanation

Market value of land		€1,250 million
Replacement cost, including constructor's profit	$€630.00 \times 2.5 \text{ million} = €1,575 \text{ million}$	
Reduction for curable deterioration	– €10 million	
Reduction for incurable deterioration	$(15/75) \times [€1,575 \text{ million} - 10 \text{ million}] = - €313 \text{ million}$	
Reduction for obsolescence	– €50 million	
Building value		€1,202 million
Total Cost Value		€2,452 million

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #16 of 45

The levered internal rate of return for the apartment project is *closest* to:

- A) 22.0%.
- B) 19.2%.
- C) 12.3%.



Explanation

Net operating income	€264,000,000
Annual debt service	€121,220,135
Cash flows (PMT) for 10 years	$€264,000,000 - €121,220,135 = €142,779,865$
Cash initial outflow year 0 (PV)	$€2,350,000,000 \times 0.40 = €940,000,000$
Terminal value (FV) in 10 years	$€2,800,000,000 - €909,893,015 = €1,890,106,985$

PMT = €142,779,865; PV = - €940,000,000; FV = €1,890,106,985; N = 10; Solve for I/Y.

Internal rate of return is 19.23%.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #17 of 45

The *best* estimate for the real-estate project's value using the direct capitalization method is:

A) €2.60 billion.



B) €2.00 billion.



C) €2.40 billion.



Explanation

The estimated market value is the net operating income divided by the capitalization rate. We determine the rate using comparable properties, and we have three of them.

Property A the cap rate is $€192 \text{ million} / €1,600 \text{ million} = 12.0\%$.

Property B the cap rate is $€550 \text{ million} / €5,500 \text{ million} = 10.0\%$.

Property C the cap rate is $€715 \text{ million} / €6,500 \text{ million} = 11.0\%$.

The average cap rate is $12.0\% + 10.0\% + 11.0\% / 3 = 11.0\%$.

Market value = NOI / capitalization rate = $€264 \text{ million} / 11.0\% = €2.40 \text{ billion}$.

(Study Session 15, Module 42.3, LOS 42.i)

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Question #18 of 45

What kind of transaction seems *most suitable* for:

Belgarrique KinderWerks

- | | | |
|--------------------|-----------------|---|
| A) Venture capital | Venture capital |  |
| B) Buyout | Venture capital |  |
| C) Venture capital | Buyout |  |

Explanation

Data on management, sales strategy, working capital, exit strategy, and risk suggest Belgarrique is a buyout candidate and KinderWerks is a venturecapital candidate. Data on the companies' chief goals is inconclusive. Data on company financing is a red herring, as companies active in capital markets tend to be better candidates for buyouts than venture capital. However, five of the seven pieces of information in the relevant table above reflect characteristics that suggest Belgarrique is a buyout candidate, while KinderWerks is a better target for venture capital.

(Study Session 15, Module 42.3, LOS 42.i)

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Question #19 of 45

To address his concerns about lower-than-expected profits and bankruptcy, Klios should:

- | | |
|-------------------------------|---|
| A) adjust the terminal value. |  |
| B) switch to a target IRR. |  |
| C) adjust the discount rate. |  |

Explanation

The target IRR method uses one discount rate, and it cannot compensate for a possibility of lower profits or failure. Klios can adjust a discount rate to compensate for a possibility of failure, but not both adverse actions. However, he can adjust to terminal value to account for more than one potential outcome.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #20 of 45

Which of the following is *least likely* a reason for Klios's concern about standard deviation as a measure of hedge fund risk?

- A) Excess kurtosis of hedge fund return distribution.
- B) Negative skewness of hedge fund return distribution.
- C) Survivorship bias.



Explanation

Survivorship bias affects hedge fund indices but not individual hedge fund's return distribution. Standard deviation as a measure of risk is inadequate in the presence of a non-normal distribution of hedge fund returns. Hedge fund return distributions are characterized by negative skewness and excess kurtosis and hence are not normal.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Patel, Sung and Wynn (PSW) is a private real estate company that buys, develops, manages and sells commercial real estate properties for its clients. PSW is considering buying the Monroe office building in the downtown section of Potus City. Adams, Jefferson and Madison are other office buildings that are similar properties also located in downtown. The following information was gathered by PSW analysts.

Potus City Economic Outlook: The economy is expected to rebound after a recent recessionary period. Economic expansion is expected to last at least the next five years. Projected economic factors for next five years:

Job Growth	Moderate to High
------------	------------------

Population Growth	Moderate
Inflation	Low

The job growth is expected to lead to an influx of young professionals to downtown. This will increase demand for residential rental properties. Other commercial developments are under consideration by the city government. Construction time for new buildings is three years after city approval.

Few sales of office buildings have occurred recently. The last three sales of comparable buildings are listed below. Supply of office space is limited because no commercial buildings of any kind have been built in downtown over the last seven years mostly due to the economic slowdown.

Monroe Office Building			Monroe Office Building	Cost estimates
Square footage	500,000		Effective age of building	10 years
Monthly rent	\$4.00 per sq ft		Total economic life	50 years
Expected vacancy	5.0%		Estimated value of land	\$45,000,000
Operating expenses	42.5% of EGI		Replacement cost	\$250.00 per sq ft
Property management fee	7.5% of EGI		Developer's profit	\$15.00 per sq ft
Other income	\$3,000,000 per year		Curable deterioration	\$5,000,000
Location	Prime		Total obsolescence	\$4,000,000
Growth rate	2.5%		Terminal cap rate	8.0%
NOI starting Year 8	\$15,000,000			

(Note: EGI = Effective gross income)

Recent Transactions of Office Buildings in Potus City:

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Office Buildings	Adams	Jefferson	Madison
Size in square feet	400,000	300,000	600,000
Age in years	7	10	13
Location	Prime	Secondary	Secondary
Age of transaction (in months)	12	36	24
Sales price	\$110,000,000	\$67,500,000	\$165,000,000
Projected NOI	\$9,900,000	\$5,737,500	\$13,200,000

Additional information:

- Depreciation is 2.5% per year.
- Location can be: Prime, Secondary or Tertiary. Prime locations are the most sought and 10.0% is the adjustment needed per classification.
- Market prices have been increasing at a rate of 0.25% per month.

The cost approach method resulted in an estimated value of \$143.0 million.

For the discount cash flow approach: The NOI for year 1 and the estimated cap rate are the same as the calculated values for direct capitalization value. PSW is looking to sell the property at the end of seven years. The discount cash flow approach resulted in an estimated value of \$158.9 million.

In addition to the purchase of Monroe Building, PSW is considering developing a mixed use building (a combination of retail space and residential apartments) which has been approved by the city.

In discussing the project, the Patel makes the following statement:

"I recommend we structure the rental of retail space as a percentage lease".

Question #21 of 45

The value of the property using the direct capitalization method is *closest to*:

- A) \$151 million.
- B) \$137 million.
- C) \$134 million.



Explanation

The direct capitalization calculation.

Net operating income	
Rental income	$500,000 \times \$4.00 \times 12 = \$24,000,000$
Other income	\$3,000,000
Potential gross income (PGI)	$\$24,000,000 + \$3,000,000 = \$27,000,000$
Vacancy	$5.0\% \times \$27,000,000 = \$1,350,000$
Effective gross income (EGI)	$\$27,000,000 - \$1,350,000 = \$25,650,000$
Property management fee	$7.5\% \times \$25,650,000 = \$1,923,750$
Operating expenses	$42.5\% \times \$25,650,000 = \$10,901,250$
NOI = EGI – OpEx – PM fee	$\$25,650,000 - \$12,825,000 = \$12,825,000$

Cap rate calculation

Office Building	Adams	Jefferson	Madison
Cap rate	$\$9.9/\$110.0 = 9.0\%$	$\$5.7375/\$67.5 = 8.5\%$	$\$13.2/\$165.0 = 8.0\%$

The average cap rate for the three office buildings is 8.5%. Value of Monroe is NOI of \$12,825,000 divided by the cap rate of 8.5% or \$150.88 million.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #22 of 45

The value of the property using the sales comparison method is *closest* to:

- A) \$151 million.
- B) \$157 million.
- C) \$145 million.



Explanation

The sales comparison method calculation.

Variable	Adams	Jefferson	Madison
Sale price	\$110,000,000	\$67,500,000	\$165,000,000
Size	400,000	300,000	600,000
Sale price per sq ft	\$275.00	\$225.00	\$275.00
Age adjustment	-7.5%	0.0%	+7.5%
Location adjustment	0.0%	+10.0%	+10.0%
Dale of sale adjustment	+3.0%	+9.0%	+6.0%
Total adjustments	-4.5%	+19.0%	+23.5%
Adjusted sales price psf	$\$275 \times (1 - 0.045)$ = \$262.63	$\$225 \times (1 + 0.190)$ = \$267.75	$\$275 \times (1 + 0.235)$ = \$339.63

Average sales price per square foot is \$290.00. The sales comparison method estimates the value of the property at 500,000 square feet \times \$290.00 = \$145.0 million.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #23 of 45

Based on Potus City economic outlook the *most* reliable estimated value is from the:

- A) cost approach.
- B) income approach.
- C) sales comparison approach.



Explanation

The most reliable approach for estimated value for Monroe is the income approach. There are only a few transactions over the years so the sales comparison approach may not be a good approach. Sales comparison is most reliable when the real estate market is active. Cost approach may not be very reliable because cost estimates will be difficult to find when there has not been new construction in Potus City for the last seven years. The property does have income streams that can be used to value the property.




(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #24 of 45

If the estimated value for the direct capitalization approach is less than the estimated value for the discount cash flow approach, this may be possible because:

- A) the estimated value of the discount cash flow approach is greater the first seven years. 
- B) the terminal cap rate is less than the going in cap rate. 
- C) the growth rate is not factored in the direct capitalization approach. 

Explanation

The estimated value of direct capitalization would equal the estimated value of the discount cash flow approach if the cap rate, the growth rate and NOI are the same and the property is held in perpetuity. In this example for the direct cash flow approach, the property is sold after year 7. The only way the estimated value of the discount cash flow approach can be greater than the estimated value of the direct capitalization approach is because of the terminal value. The inputs of the terminal value, NOI of \$15 million and the lower cap rate of 8.0% results in a value greater from Year 8 onward.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #25 of 45

Which additional economic information would increase the likelihood that Patel's recommendation generates higher rents?

A) Low vacancy rate.



B) High consumer confidence.



C) Higher imports.



Explanation

To achieve potential higher rents for a percentage rent lease, an increase in sales is necessary. Retail sales are heavily dependent on consumer spending. A higher consumer confidence leads to higher consumer spending.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #26 of 45

The estimated value from the cost approach was revised upward. The *most likely* reason for this is:

A) the total obsolescence was underestimated.



B) the effective age of the building was adjusted upward to more than 10 years.



C) the replacement cost was updated to a value greater than \$250.00 psf.



Explanation

The estimated value of the cost approach increases as replacement costs increase. The higher effective age increases the reduction for incurable deterioration which lowers the estimated value. An increase in any of the obsolescence will reduce the estimated value.

(Study Session 15, Module 42.3, LOS 42.i)

Related Material

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Question #27 of 45

Suppose you have collected the information in the table below for four comparable properties.

Property	Net Operating Income (NOI)	Selling Price
A	\$200,000	\$2,250,000
B	\$220,000	\$2,000,000
C	\$250,000	\$2,500,000
D	\$230,000	?

Using the market extraction method in conjunction with an average capitalization rate, the market value (MV) for Property D is estimated to be *closest* to:

A) \$2,300,000. 

B) \$2,090,909. 

C) \$2,309,237. 

Explanation

Market extraction technique: $C = \text{NOI} / \text{MV}$

$$C_A = \frac{\text{NOI}_A}{\text{MV}_A} = \frac{200,000}{2,250,000} = 8.89\%$$

$$C_B = \frac{\text{NOI}_B}{\text{MV}_B} = \frac{220,000}{2,000,000} = 11.0\%$$

$$C_C = \frac{\text{NOI}_C}{\text{MV}_C} = \frac{250,000}{2,500,000} = 10.0\%$$

$$\text{Estimated capitalization rate: } C_D = \frac{8.89 + 11.0 + 10.00}{3} = 9.96\%$$

Then, using the direct income capitalization approach we have:

$$\text{MV}_D = \frac{\text{NOI}_D}{C_D} = \frac{230,000}{0.0996} = \$2,309,236.95$$

(Study Session 15, Module 42.2, LOS 42.g)

Related Material

[SchweserNotes - Book 5](#)

Kent Clarkson, Tony Chekov and Peter Chanwit are investment consultants for a large public pension fund. They are partners in Clarkson, Chekov and Chanwit Consulting also known as 3CC. From previous meetings with the pension board, it has been established there will be an

increase in exposure to real estate for the overall portfolio. Because of the defined benefit plan's significant size and their staff's expertise, the pension fund can invest and manage all forms of real estate investments. Partners of 3CC are to recommend a form of real estate investments, and recommend potential investments.

Expected Real Estate Market Conditions

Both residential and commercial real estate prices have fallen over the last five years. This trend is not expected to persist. It is a 'buyer's market' – the current supply exceeds the current demand and prices are lower than the intrinsic value. Although interest rates have fallen to historically low rates, the volume of real estate transactions remains low. Current average 20-year commercial mortgage rates are 3.75% and expected to stay relatively flat for at least 7 more years.

Loan underwriting standards have become more stringent and loan-to-value (LTV) ratios are expected to be lower than the earlier average rate of 80%.

The four forms of real estate under consideration as an investment choice for the pension fund are:

- Private: equity option is to buy commercial properties and manage them; debt option is to directly lend to commercial property investors.
- Public: equity option is to buy equity REITs; debt option is to buy mortgage REITs or CMOs.

The following information was collected by 3CC partners to aid their analysis. The returns and standard deviations of the four possible forms of real estate investments considered are listed in Exhibit 1. Correlations of real estate index with Treasury bill returns, US aggregate bond returns and US stock returns are listed in Exhibit 2.

Exhibit 1: Returns and Standard deviation (past 20 years)

	Returns	σ
Private Equity	9.5%	6.5%
Private Debt	5.5%	8.5%
Public Equity	11.5%	21.0%
Public Debt	6.2%	22.5%
Treasuries	3.5%	0.6%

Exhibit 2: Correlation of Real Estate Index With Other Asset Classes (past 20 years)

Real Estate Index Correlations	ρ
US Treasuries	0.35
US Aggregate Bonds	-0.05
US Stocks	0.25

The partners make the following statements:

Kent Clarkson: We should eliminate the private debt option from consideration. Returns for private debt are likely to be low since interest rates are likely to remain low and the amount of underwriting that is going to be required as a lender doesn't seem worth it.

Tony Chekov: I like the equity options better than the debt options based on Clarkson's private debt expectations.

Peter Chanwit: I prefer the private option over the public option since the pension fund staff can better actively manage the real estate projects and possibly outperform the index.

The partners have identified specific REIT managers who have consistently outperformed their indices for the public option. They have also contacted potential high creditworthy borrowers in case of private debt. For the private equity option, the partners are looking at different commercial properties. They have narrowed their choices to hotels and multi-family units.

Peter Chanwit is analyzing two specific buildings. Green Oaks Hotel and Blue Ridge Apartments are next to each other; have exactly the same number of units, same amenities; were built 10 years ago by the same construction company; and managed by the same property management company. They are currently owned by different entities that are also looking to provide the financing on the following basis.

Green Oaks Hotels		Blue Ridge Apartments	
Asking Price	\$25,000,000	Asking Price	\$25,000,000
Annual NOI End of Year 1	\$2,187,500	Annual NOI End of Year 1	\$2,125,000
LTV	75.0%	LTV	70.0%
Loan Interest Rate	4.00%	Loan Interest Rate	3.50%
Monthly Debt Service	\$113,621	Monthly Debt Service	\$101,493
Loan Term	20 Years	Loan Term	20 Years

Expected Sales Price in 10 Yrs	\$30,000,000.00	Expected Sales Price in 10 Yrs	\$30,000,000.00
Principal Owed at End of 10 Yrs	\$11,222,397	Principal Owed at End of 10 Yrs	\$11,144,755

The pension fund can buy one or both buildings provided they meet the minimum criteria of a debt service coverage ratio of at least 1.50X and a levered IRR of at least 17.5%.

The indices under consideration as the benchmark for private real estate equity investing are:

- Jackson Property Index (JPI) is an appraisal based index.
- Taft's Sales Index (TSI) is a repeat sales index.
- Lincoln Hedonic Index (LHI) is a hedonic index.

Concerns regarding the index choice were verbalized at a 3CC meeting:

Kent Clarkson: I'm worried about Lincoln Hedonic Index. This index may adjust for differences in property characteristics but I'm not sure it can be effective given that some properties may not sell more than once during the index's coverage period.

Tony Chekov: I don't like the Jackson Property Index. Appraisals are estimates; there haven't been many transactions lately so I question the reliability of the returns.

Peter Chanwit: I'm not sure about Taft's Sales Index. It relies on actual transactions but there are so few sales recently so how reliable are the returns?

Question #28 of 45

Based on projected real estate conditions and the partners' discussion given in the vignette, 3CC's top recommendation would *most likely* be:

- A) private equity.
- B) public debt.
- C) public equity.



Explanation

The category that 3CC would most likely recommend as first choice is private equity option. Chekov prefers equity to debt option and Chanwit prefers private over public option. Clarkson wants to eliminate private debt option. Their statements are also consistent with the real estate market expectations.

(Study Session 15, Module 42.1, LOS 42.a)

Related MaterialSchweserNotes - Book 5

Question #29 of 45

If the pension plan chooses to buy mortgage REITs, the *mostly likely* benefit from real estate investing is the:

- A) capital appreciation.
- B) current income.
- C) inflation hedge.

**Explanation**

A mortgage REIT is a public debt form of real estate investing. Current income is a source of returns since an investor of a mortgage REIT would receive cash flows attributable to mortgage payments into the pool. Capital appreciation only exists for an equity investor of properties and not a debt investor. Inflation hedge is possible for an equity investor if property values/cash flows are positively correlated with inflation.

(Study Session 15, Module 42.1, LOS 42.a)

Related MaterialSchweserNotes - Book 5

Question #30 of 45

If the pension fund chooses to invest in hotels over apartments, one possible reason for this is that hotels:

- A) may offer higher rates of returns because of higher operational risk.
- B) are commercial properties while apartments are residential properties.
- C) are not affected by cost and availability of debt capital.

**Explanation**

All real estate values are affected by cost and availability of capital. Apartments and other multi-family units are considered commercial real estate. Hotels require more active management making them more risky ventures as more operational expertise is needed. This additional risk requires a higher rate of return.




(Study Session 15, Module 42.1, LOS 42.a)

Related Material

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Question #31 of 45

Compared to Blue Ridge Apartments, Green Oaks Hotel has higher:

- A) discount rate because the amount of principal owed is higher. 
- B) cap rate. 
- C) net operating income because of the higher debt service. 

Explanation

The cap rate is NOI for next year divided by the current value. Since the asking price for both properties is same, higher NOI for Green Oaks hotel would have to have a higher cap rate. Net operating income is not calculated using the debt service. The amount owed at the end of a loan is determined by the interest rate, term of the loan and the amount borrowed. The discount rate is the sum of the cap rate and growth rate. The growth rate is not determined by the amount owed at the end of a loan period.




(Study Session 15, Module 42.1, LOS 42.a)

Related Material

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Question #32 of 45

Which choice meets the minimum criteria for investment?

- A) Blue Ridge only. 
- B) Green Oaks only. 
- C) both Green Oaks and Blue Ridge. 

Explanation

Both Green Oaks and Blue Ridge meet the minimum criteria.

	Green Oaks Hotel	Blue Ridge Apartments
NOI	\$2,187,500	\$2,125,000
Annual Debt Service	$\$113,621 \times 12 =$ \$1,363,452	$\$101,493 \times 12 =$ \$1,217,916
DSCR	$\$2,187,500 / \$1,363,452$ = 1.60X	$\$2,125,000 / \$1,217,916$ = 1.74X
Cash flows (PMT)	$\$2,187,500 -$ $\$1,363,452 = \$824,048$	$\$2,125,000 -$ $\$1,217,916 = \$907,084$
Equity (PV) ¹	\$6,250,000	\$7,500,000
Sales Price – Debt in 10 Years (FV)	$\$30,000,000 -$ $\$11,222,397 =$ \$18,777,603	$\$30,000,000 -$ $\$11,144,755 =$ \$18,855,245
Sales Date (N)	10	10
Levered IRR	20.66%	18.40%

¹Equity is based on (1-LTV) of the asking price

Sample BA II PLUS keystrokes to calculate Levered IRR for Green Oaks Hotel:

824048[PMT] 6250000[+/-][PV] 18777603[FV] 10[N] [CPT][I/Y]

Note that the initial equity value of \$6,250,000 is entered as a negative number.

(Study Session 15, Module 42.1, LOS 42.a)

Related Material

[SchweserNotes - Book 5](#)

Question #33 of 45

Which statement regarding issues with indices is *least likely* correct?

A) Chekov's statement.



B) Clarkson's statement.



C) Chanwit's statement.



Explanation

Clarkson's concerns about Lincoln Hedonic Index if individual properties don't sell more than once are unfounded. Hedonic Index construction does not require multiple sales of the same property.

(Study Session 15, Module 42.1, LOS 42.a)

Related Material

[SchweserNotes - Book 5](#)

Question #34 of 45

A real estate investment is expected to have cash flows after taxes in each of the next four years equal to GBP90,000, GBP55,000, GBP35,000, and GBP25,000, respectively. The initial equity investment in this property is GBP200,000 and the equity at the end of year-four is estimated to be GBP100,000. Assuming an after tax return on equity of 8.5%, the net present value (NPV) and internal rate of return (IRR) for this investment is *closest* to:

	<u>NPV</u>	<u>IRR</u>	
A)	GBP47,268	18%	
B)	GBP41,399	15%	
C)	GBP45,376	16%	

Explanation

Using your TI BAII Plus:

[CF] [2nd] [CLR WORK]
 -200,000 [+/-] [ENTER] [↓]
 90,000 [ENTER] [↓] [↓]
 55,000 [ENTER] [↓] [↓]
 35,000 [ENTER] [↓] [↓]
 125,000 (note: CF3 = 25,000 + 100,000)
 [NPV] {8.5} [ENTER] [↓]
 [CPT] = GBP 47,267.91

[IRR] [CPT] = 18.39%

(Study Session 15, Module 42.5, LOS 42.m)

Related Material[SchweserNotes - Book 5](#)

Question #35 of 45

Which of the following is *least likely* a difference between real estate investments and traditional asset classes like stocks and bonds?

- A) Real estate tends to be indivisible
- B) Real estate tends to be difficult to value
- C) Real estate tends to be homogenous

**Explanation**

Investment in real estate is complicated by difficulty in valuing real estate, indivisibility of real estate investment (high unit value) and heterogeneity of different real estate properties even within the same class/geographical location.

(Study Session 15, Module 42.1, LOS 42.b)

Related Material[SchweserNotes - Book 5](#)

Question #36 of 45

A real estate market is characterized by frequent transactions. However, individual properties have long holding periods. Which real estate pricing index would be *least* suitable in such an environment?

- A) Repeat sales index.
- B) Appraisal based index.
- C) Hedonic price index.

**Explanation**

Repeat sales index relies on repeat sales of individual properties. Since individual properties have long holding periods, repeat sales index would be least suitable. Hedonic price index relies on transaction data and the regression model explains the variation in transaction prices based on differences between individual properties sold. Appraisal based indices use transaction prices also to estimate value after adjustments for differences. Since there are plenty of transactions, appraisal and hedonic price index have sufficient data to provide good value estimates.

(Study Session 15, Module 42.5, LOS 42.k)

Related Material

[SchweserNotes - Book 5](#)

Question #37 of 45

Compared to transaction-based indices used to track the performance of private real estate, appraisal-based indices are *most likely* to exhibit an apparent:

- A) higher volatility.
- B) higher correlation with other asset classes.
- C) time lag.



Explanation

Appraisal-based indices tend to lag transaction-based indices, as appraised values adjust only slowly to sudden shifts in the market.

Appraisal-based indices are "smoothed" by this lag, which causes appraisal-based indices to appear to have *lower* volatility and *lower* correlation with other assets than a transaction-based index would.

(Study Session 15, Module 42.5, LOS 42.k)

Related Material

[SchweserNotes - Book 5](#)

Question #38 of 45

Which one of the following is *least likely* an error in using DCF method of real estate valuation?

- A) Terminal cap rate and going-in cap rate are not consistent
- B) Income growth is equal to expense growth.



C) Terminal cap rate applied to atypical NOI.



Explanation

DCF valuation often assumes that income growth is same as expense growth (and hence same as the NOI growth assumed). When they differ, an error is made in using DCF method assuming constant growth in NOI. Terminal cap rate should be applied to typical NOI (NOI normally expected) and not to atypical NOI (NOI estimate artificially too high or too low temporarily). If the terminal cap rate and going-in cap rate are inconsistent (based on different set of assumptions), the valuation using DCF will be flawed.

(Study Session 15, Module 42.3, LOS 42.h)

Related Material

SchweserNotes - Book 5

Question #39 of 45

Which of the following statements *most accurately* describes the capitalization rate used for real estate valuation?

- A) The capitalization rate is the rate of return that equity investors require on similar-risk real estate investments net of the expected constant growth rate of net
- B) The capitalization rate is the rate of return that equity investors require on similar-risk real estate investments.
- C) The capitalization rate is one plus the constant growth rate of net operating income.

Explanation

The capitalization rate (C) is the rate of return that equity investors require on similar-risk real estate investments (r) net of the expected constant growth rate of net operating income (g). That is, $C = r - g$.

(Study Session 15, Module 42.2, LOS 42.f)

Related Material

SchweserNotes - Book 5

Question #40 of 45

Appropriate due diligence in a private real estate investment is *most likely* to:

- A) review lease and rental history.
- B) lower existing operating costs.
- C) mitigate unforeseen potential problems.



Explanation

Due diligence can be very costly but it can potentially lower risk of unexpected legal and physical real estate problems. Due diligence will usually increase current operating costs. A review of lease and rental history is one example of due diligence not a possible result of due diligence.

(Study Session 15, Module 42.3, LOS 42.j)

Related Material

[SchweserNotes - Book 5](#)

Question #41 of 45

Which of the following *most accurately* identifies a private equity investment in income-producing real estate?

- A) Investment in a real estate investment trust (REIT).
- B) Private market mortgage lending by an insurance company.
- C) Direct ownership of real estate properties.



Explanation

Real estate investments take four major forms: private equity, publicly traded equity, private debt, and publicly traded debt. Private equity investment in real estate refers to direct ownership of real estate properties. Mortgage lending by banks or insurance companies is best described as private debt. Indirect ownership of real estate through equity securities such as REITs is an example of publicly traded equity.




(Study Session 15, Module 42.1, LOS 42.b)

Related Material

[SchweserNotes - Book 5](#)

Question #42 of 45

Which of the following valuation approaches is only applicable in its application to income-generating properties?

- A) Only the direct income capitalization approach. 
- B) Only the gross income multiplier approach. 
- C) Both the gross income multiplier approach and the direct income capitalization approach. 

Explanation

Both valuation approaches are limited to use with income producing properties. Neither approach can provide an accurate value estimate for owner-occupied properties because the benefit derived by the owner is difficult to measure in monetary terms.




(Study Session 15, Module 42.2, LOS 42.f)

Related Material

[SchweserNotes - Book 5](#)

Question #43 of 45

All of the following statements accurately describe the real estate capitalization rate EXCEPT:

- A) holding all else constant, the risk of a real estate investment is directly related to its estimated value. 
- B) there is an inverse relationship between estimated market values and capitalization rates. 
- C) holding all else constant, market value estimates increase as the growth rate in net operating income increases. 

Explanation

$$MV = \frac{NOI}{r - g} = \frac{NOI}{C}$$

where:

MV = estimated market value

NOI = the net operating income from a real estate investment.

r = the rate that equity investors require from a real estate investment.

g = the growth rate of NOI (assumed to be constant).

$C = r - g$ = the market capitalization rate.

As the riskiness of a real estate investment increases, the uncertainty of its future cash flows increases. This has the effect of increasing investors' required return (r) and increasing the capitalization rate. As cap rates rise, values decline.

(Study Session 15, Module 42.2, LOS 42.f)

Related Material

[SchweserNotes - Book 5](#)

Question #44 of 45

Which of the following *most accurately* identifies one of the characteristics of a private equity investment in income-producing real estate?

A) Passive management.



B) Sensitivity to the credit market.



C) Homogeneity.



Explanation

Real estate values are sensitive to the cost and availability of debt capital since of the large amounts of borrowing are required to purchase real estate properties. Real estate is heterogeneous, as no two properties are the same. Direct ownership of real estate properties is management intensive. Other unique characteristics possessed by real estate properties include: fixed location, high unit value, depreciation, high transaction cost, illiquidity, and difficult to value.

(Study Session 15, Module 42.1, LOS 42.b)

Related Material

[SchweserNotes - Book 5](#)

Question #45 of 45

Leverage results in higher returns when:

- A) Debt is cheap.
- B) Investment return exceeds cost of debt.
- C) Asset prices are increasing.



Explanation

Leverage results in higher returns to equity investors when the return on investment exceeds the cost of debt. Even if debt is cheap, low investment returns would not lead to higher returns due to use of leverage. Similarly, even if return on investment is high, as long as it does not exceed the cost of debt, leverage will not generate higher returns.

(Study Session 15, Module 42.1, LOS 42.1)

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