# CHAPTER 1

# The Nature of Real Estate and Real Estate Markets

**Test Problems**

1. A market where tenants negotiate rent and other terms with property owners or their managers is referred to as a:

b. User market

1. The market in which required rates of return on available investment opportunities are determined is referred to as the:

d. Capital market

1. The actions of local, state, and federal governments affect real estate values

d. Through all of the above

1. What portion of households owns their house?

b. Approximately two-thirds

1. Of the following asset categories, which class has the greatest aggregate market value?

d. Nongovernment real estate

1. Storm water drainage systems are best described as:

b. Improvements to the land

1. What is the single largest asset category in the portfolio of a typical U.S. household?

a. Housing

1. Real estate markets differ from other asset classes by having all of the following characteristics except:

d. Homogeneous product

1. Which of the following is *not* important to the location of commercial properties?

c. Access to schools

10. Which of the following attributes of a home are the most difficult to observe and value?

c. Location attributes

**Study Questions**

1. The term *real estate* can be used in three fundamental ways. List these three alternative uses or definitions.

*Solution*: Real estate is most commonly defined as land and any improvements made to or on the land, including fixed structures and infrastructure components. The term is also used to describe the “bundle of rights” associated with the ownership and use of the physical characteristics of space and location. Finally, real estate may be described as the business activities related to the development, construction, acquisition, operation, and disposition of real property assets.

1. The U.S. represents about 6 percent of the earth’s land service, or approximately 2.3 billion acres. Who actually owns this land? What is the distribution of this land among the various uses (e.g., developed land, federal, land, forest land).

*Solution*: Developed land, consisting of residential, industrial, commercial, and institutional land, represents approximately 6 percent of the total land in the U.S. Federal lands and water areas occupy about 23 percent of the land; crop land and CRP land represent about 20 percent; and pasture land comprises about 6 percent of the land. Finally, the remaining land is divided between range land and forest land, with each representing 21 percent of all U.S land.

1. Describe the value of U.S. real estate by comparing it to the values of other asset classes (e.g., stocks, bonds).

*Solution*: As of 2016, real estate (including owner-occupied housing, but excluding real estate held by non-real estate corporations) was the second largest asset class in the U.S., valued at approximately $30.8 trillion. The value of publicly traded corporate equities at that time was $35.7 trillion. The value of mortgage debt (on all property types) was approximately $13.8 trillion. This is larger than the existing stock of both corporate and foreign bonds and just slightly less than the outstanding value of U.S. Treasury Securities.

1. How much of the wealth of a typical U.S. household is tied up in housing? How does this compare to the role that assets and investments play in the portfolios of U.S. households?

*Solution*: Housing is the single largest asset in the typical U.S. household’s portfolio, representing approximately 22 percent of household wealth in 2016. In comparison, the total value of corporate stocks and mutual fund shares represents 21 percent of household assets. Pension reserves, excluding stocks, also represent 21 percent of household assets. Deposits and money market funds represent 11 percent of household assets.

1. Real estate assets and markets are unique when compared to other assets or markets. Discuss the primary ways that real estate markets are different from the markets for other asset that trade in well-developed public markets.

*Solution*: Real estate is unlike other asset classes because it is heterogeneous and immobile. Real estate assets have unique and distinctive characteristics, such as age, building design, and location. Real estate is also immobile; therefore, location is an important attribute. Because real estate assets are heterogeneous and immobile, real estate markets are illiquid and localized. Potential users of real property and competing real estate are typically located in the same area or region. Additionally, real estate markets are highly segmented because of their heterogeneous nature. Therefore, potential users of a specific type of real property generally do not seek to substitute one property category for another. Finally, most real estate transactions are privately negotiated and have relatively high transaction costs.

1. Explain the role of government in real estate at the federal, state, and local level. Which has the most significant impact on real estate markets?

*Solution*: Local government has the most influence on real estate markets. It affects the supply and cost of real estate through zoning and land use regulations, fees on new land development, and restrictive building codes. It also affects rental rates through the assessment of property taxes. Finally, local government affects the supply and quality of real estate through the provision of community infrastructure and through building codes. The Federal government influences real estate through income tax policy, housing subsidy programs, federal financial reporting requirements, fair housing laws, and disclosure laws. State government generally has the least influence on real estate. State government affects real estate through the licensing of real estate professionals, establishment of statewide building codes, the creation of fair housing and disclosure laws, and through numerous housing related subsides for low and moderate income households. In addition, the state may protect some environmentally sensitive lands from development.

1. Identify and describe the interaction of the three economic sectors that affect real estate value.

*Solution*: The three economic sectors that influence real estate value are user markets, capital markets, and government. In real estate user markets, households and firms compete for physical location and space. This competition determines who will obtain the use of a specific property and how much will be paid for the use of this property. Capital markets provide the financial resources necessary for the development and acquisition of real estate assets. Real estate competes for resources against other investment opportunities in the capital market based on investor required rates of returns and risk considerations. Capital markets are segregated into two categories: equity interests and debt interests. Government influences the interaction between the user markets and capital markets through tax policy, regulations, provisions of services and infrastructure, subsidies and other means.

1. Real estate construction is a volatile process determined by the interaction of the user, capital, and property markets. What signals do real estate producers (i.e., developers) use to manage this process? What other factors affect the volatility of real estate production?

*Solution*: When real estate market prices exceed the cost of production, this signals producers to build, or add additional supply. As the supply of real estate increases relative to demand, rental rates decline in the user market, which lowers property values and signals the real estate market to slow the production of real estate. Furthermore, shocks in the capital markets and the volatility of construction costs add to the volatility of real estate production. For example, higher interest rates adversely affect property values, all else equal, thereby reducing the attractiveness of new construction. Additionally, shortages of key building materials and organized labor disputes may contribute to the volatility of real estate production.

# CHAPTER 14

# The Effects of Time and Risk on Value

**Test Problems**

1. How much will a $50 deposit made today be worth in 20 years if interest is compounded annually at a rate of 10 percent?

d. $336.37

1. How much would you pay today for the right to receive $80 at the end of 10 years if you can earn 15 percent interest on alternative investments of similar risk?

b. $19.77

1. How much would you pay today to receive $50 in one year and $60 in the second year if you can earn 15 percent interest on alternative investments of similar risk?

a. $88.85

1. What amount invested at the end of each year at 10 percent annually will grow to $10,000 at the end of five years?

b. $1,637.97

1. How much would you pay today for the right to receive nothing for the next 10 years and $300 a year for the following 10 years if you can earn 15 percent interest on alternative investments of similar risk?

a. $372.17

1. What is the present value of $500 received at the end of each of the next three years and $1,000 received at the end of the fourth year, assuming a required rate of return of 15 percent?

c. $1,713.37

1. If a landowner purchased a vacant lot six years ago for $25,000, assuming no income or holding costs during the interim period, what price would the landowner need to receive today to yield a 10 percent annual return on the land investment?

c. $44,289.03

1. What is the present value of the following series of cash flows discounted at 12 percent: $40,000 now; $50,000 at the end of the first year; $0 at the end of year the second year; $60,000 at the end of the third year; and $70,000 at the end of the fourth year?

d. $171,836 (without rounding, answer is $171,835.94)

1. Assume an investment is priced at $5,000 and has the following income stream (year 1, $1,000; year 2, -$2,000; year 3, $3,000; and year 4, $3,000). Would an investor with a required rate of return of 15 percent be wise to invest at a price of $5,000?

b. No, because the investment has a net present value of -$1,954.91.

1. As the level of perceived risk increases,

d. Values decrease and expected returns increase.

**Study Questions**

1. Dr. Bob Jackson owns a parcel of land that a local farmer has offered to rent from Dr. Bob for the next 10 years. The farmer has offered to pay $20,000 today or an annuity of $3,200 at the end of each of the next 10 years. Which payment method should Dr. Jackson accept if his required rate of return is 10 percent?

*Solution*: Dr. Jackson should choose the payment method that maximizes his net present value. If he chooses the lump sum payment, the net present value is simply the $20,000 he will receive today. If he chooses the annuity plan, the net present value will be only $19,662.61.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 10 | I = 10 % | PV =? | PMT = 3,200 | FV = 0 |

Therefore, Dr. Jackson should choose the lump sum payment of $20,000.

2. You are able to buy an investment today for $1,000 that gives you the right to receive $438 in each of the next three years. What is the internal rate of return on this investment?

*Solution*: This is simply a yield calculation problem. Like any time-value-of-money problem, we are given four inputs and are asked to solve for the fifth. In this case, we must solve for the interest rate as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 3 | I =? | PV = -1,000 | PMT = 438 | FV = 0 |

Solving this setup tells us the above loan yields a 15 percent return.

3. Calculate the present value of the income stream given below assuming a discount rate of 8 percent. What happens to present value if the discount rate increases to 20 percent?

|  |  |
| --- | --- |
| Year | Income |
| 1 | $3,000 |
| 2 | $4,000 |
| 3 | $6,000 |
| 4 | $1,000 |

*Solution*: This problem is solved by entering the annual income stream and discount rate into the cash flow registers of any standard financial calculator and solving for the net present value. Assuming an 8% discount rate, the income stream is valued at $11,705.16. Alternatively, if the discount rate is 20%, the value of the income stream will be $9,232.25.

4. Calculate the IRR and NPV for the following two investment opportunities. Assume a 16 percent discount rate for the NPV calculations:

|  |  |  |
| --- | --- | --- |
| Year | Project 1 Cash Flow | Project 2 Cash Flow |
| 0 | -$10,000 | -$10,000 |
| 1 | 1,000 | 1,000 |
| 2 | 2,000 | 12,000 |
| 3 | 12,000 | 1,800 |

*Solution*: To solve this problem, simply enter each set of cash flows into the cash flow registers of your financial calculator and ask it to find the IRR. For Project 1, the internal rate of return is 16.16%, while for Project 2, the internal rate of return is 21.23%. The NPV for Project 1 is $36.29 and the NPV for Project 2 is $933.21. If these projects were independent, each IRR should be individually compared to the required rate of return to determine whether the investment should be made. However, if the projects are mutually exclusive and are of equivalent risk, Project 2 is preferred to Project 1. Addtionally, the higher NPV of Project 2 clearly makes this alternative the most attractive investment option because the investor’s net worth will increase by $933.21.

5. How much would you pay today for an investment that provides $1,000 at the end of the first year if your required rate of return is 10 percent? Now compute how much you would pay at 8 percent and 12 percent rates of return.

*Solution*: At 10%, an investor would be willing to pay $909.09.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 1 | I = 10 | PV = ? | PMT = 0 | FV = 1,000 |

At 8%, an investor would be willing to pay $925.93.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 1 | I = 8 | PV = ? | PMT = 0 | FV = 1,000 |

At 12%, an investor would be willing to pay $892.86.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 1 | I = 12 | PV = ? | PMT = 0 | FV = 1,000 |

6. Your grandmother gives you $10,000 to be invested in one of three opportunities: real estate, regular bonds, or zero coupon bonds. If you invest the entire $10,000 in one of these opportunities with the expected cash flows shown below, which investment offers the highest NPV? Assume for simplicity that an 11 percent discount rate is appropriate for all three investments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Real Estate | $1,300 | $1,300 | $1,300 | $1,300 | $9,000 |
| Bond | $1,000 | $1,000 | $1,000 | $1,000 | $11,000 |
| Zero Coupon | $0 | $0 | $0 | $0 | $18,000 |

*Solution*: Entering the annual income stream and discount rate into the cash flow registers of our financial calculator, we obtain the following net present value calculations: real estate, (625.76); regular bond, (369.5); and zero coupon bond, 682.12.

7. If you purchase a parcel of land today for $25,000 and you expect it to appreciate 10 percent per year in value, how much will your land be worth 10 years from now assuming annual compounding?

*Solution*: At a 10% discount rate, the investment will be worth $64,843.56 in ten years.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 10 | I = 10 | PV = -25,000 | PMT = 0 | FV = ? |

8. If you deposit $1 at the end of each of the next ten years and these deposits earn interest at 10 percent compounded annually, what will the series of deposits be worth at the end of the 10th year?

*Solution*: At a 10% discount rate, this series of payments, or annuity, will be worth $15.94 in ten years.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 10 | I = 10 | PV = 0 | PMT = 1 | FV = ? |

9. If you deposit $50 per month in a bank account at 10 percent annual interest (compounded monthly), how much will you have in your account at the end of the 12th year?

*Solution*: At a 10% discount rate, this series of payments, or annuity, will be worth $13,821.89 in 12 years.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 144 | I = 10/12 | PV = 0 | PMT = 50 | FV = ? |

10. If your parents purchased an endowment policy of $10,000 for you and the policy will mature in 12 years, how much is it worth today, discounted at 15 percent annually?

*Solution*: At a 15% discount rate, the present value of this future payment is $1,869.07.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 12 | I = 15 | PV = ? | PMT = 0 | FV = 10,000 |

11. A family trust will convey property to you in 15 years. If the property is expected to be worth $50,000 when you receive it, what is the present value of your interest, discounted at 10 percent annually?

*Solution*: At a 10% discount rate, the present value of this future payment is $11,969.60.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 15 | I = 10 | PV = ? | PMT = 0 | FV = 50,000 |

12. You want to buy a house for which the owner is asking $625,000. The only problem is that the house is leased to someone else with five years remaining on the lease. However, you like the house and believe it will be a good investment. How much should you pay for the house today if you could strike a bargain with the owner under which she would continue receiving all rental payments until the end of the five-year leasehold at which time you would obtain title and possession of the property? You believe the property will be worth the same in five years as it is worth today and that this future value should be discounted at a 10 percent annual rate.

*Solution*: This problem requires you to determine the present value of the house today if you are willing to purchase it for $625,000 five years from today. Using a 10% discount rate, the home is worth $388,075.83 today.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 5 | I = 10 | PV = ? | PMT = 0 | FV = 625,000 |

13. If someone pays you $1 a year for 20 years, what is the present value of the series of future payments discounted at 10 percent annually?

*Solution*: At a 10% discount rate, the present value of this series of future payments, or annuity, is $8.51.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 20 | I = 10 | PV = ? | PMT = 1 | FV = 0 |

14. You are at retirement age and one of your benefit options is to accept an annual annuity of $75,000 for 15 years. The first payment would be received one year from today. What lump sum settlement, if paid today, would have the same present value as the $75,000 annual annuity? Assume a 10 percent annual discount rate.

*Solution*: At a 10% discount rate, the present value of this series of future payments is $570,455.96. This is the lump sum equivalent of receiving $75,000 for 15 years.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 15 | I = 10 | PV = ? | PMT = 75,000 | FV = 0 |

15. What monthly deposit is required to accumulate $10,000 in eight years if the deposits earn an annual rate of 8 percent, compounded monthly?

*Solution*: Assuming an 8% discount rate and a future value of $10,000, the monthly amount required to be deposited is $74.70.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 96 | I = 8/12 | PV = 0 | PMT = ? | FV = $10,000 |

16. You are thinking about purchasing some vacant land. You expect to be able to sell the land ten years from now for $500,000. What is the most you can pay for the land today if your required rate of return is 15 percent? What is the expected (annualized) return on this investment over the 10-year holding period if you purchase the land for $170,000?

*Solution*: The maximum amount you can spend to purchase this property is the present value of the future price, discounted at 15 percent for ten years. Using a financial calculator, this amount is $123,592.35.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 10 | I = 15 | PV = ? | PMT = 0 | FV = $500,000 |

The expected annualized return on this investment can be solved using a financial to obtain for the interest rate that equates a present value of $170,000 to $500,000 in ten years. The annualized return of this investment is 11.39%

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 10 | I = ? | PV = -170,000 | PMT = 0 | FV = $500,000 |

Alternatively, the cash flow function can be used to calculate the IRR of this investment, whereby the initial cash outflow at time zero is $170,000, the cash flows for the time period 1-9 is zero, and the cash flow received in year 10 is $500,000. Using this approach, the IRR is 11.39%.

17. You are considering the purchase of a small income-producing property for $150,000 that is expected to produce the following net cash flows:

End of Year Cash Flow

1. $50,000
2. $50,000
3. $50,000
4. $50,000

Assume your required internal rate of return on similar investments is 11 percent. What is the net present value of this investment opportunity? What is the going-in internal rate of return on this investment? Should you make the investment?

*Solution*: Using the cash flow function on a financial calculator and entering the information provided above, the NPV of this investment is $5,122.28. Alternatively, the NPV can be solved as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 4 | I = 11 % | PV = ? | PMT = $50,000 | FV = 0 |

The present value of this series of payments is $155,122.28. Subtracting the amount of the cash outflow at period zero ($150,000), the present value is also $5,122.28.

The going-in IRR for this investment is 12.59%. Yes, you should make the investment.

18. Raw land at the edge of urban development that lacks the necessary permits for development is one of the most risky kinds of real estate investment. Defend or refute this assertion.

*Solution*: Evaluated against the two types of investment risk confronting real estate investors, uncertainty of costs and uncertainty of value, raw land lacking permitting can be viewed as the riskiest form of real estate investment. Raw land at the edge of urban development that lacks necessary permitting for development possesses a large degree of value uncertainty because the future cash flows are not established. The value of the land is typically dependent on future growth to create market potential that is not currently in existence. Additionally, the probability of this occurring is dependent on land use regulations and the actions of the local planning authority. The total cost required to acquire and develop the raw land is unknown at the time of purchase. Only urban redevelopment projects possess comparable cost uncertainty as raw land without permitting.

19. You are contemplating replacing your conventional hot water heater with a solar hot water heater system at a cost of $4,000. How should you define the potential benefits that you need to receive to justify the investment?

*Solution*: The potential benefit gained from this investment is a reduction in future utility costs. This purchase requires an analysis of the initial costs and the value of the future benefit received in the form of lower utility bills. The homeowner should consider whether to finance this $4,000 investment and, if so, how much to borrow. The homeowner should also analyze how financing this purchase impacts the present and future cash flows associated with the purchase of the solar hot water heating system.

20. Solve for the unknown discount rate in each of the following:

|  |  |  |  |
| --- | --- | --- | --- |
| Present Value | Years | Discount Rate | Future Value |
| $2,400 | 2 | 11.24% | $2,970 |
| 3,600 | 10 | 11.61 | 10,800 |
| 390,000 | 15 | 10.95 | 1,853,820 |
| 382,610 | 30 | 9.17 | 5,316,180 |

21. Solve for the unknown number of years in each of the following:

|  |  |  |  |
| --- | --- | --- | --- |
| Present Value | Years | Discount Rate | Future Value |
| $5,600 | 9.63 | 9% | $12,840 |
| 8,100 | 17.61 | 10 | 43,410 |
| 184,000 | 19.02 | 17 | 3,645,180 |
| 215,000 | 14.94 | 15 | 1,734,390 |

22. Assume the total cost of a college education will be $310,000 when your infant child enters college in 18 years. How much you invest at the end of each month in order to accumulate the required $310,000 at the end of 18 years if your monthly investments earn an annual interest rate of 5 percent, compounded monthly?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 18 x 12 | I/YR = 5/12 | PV = 0 | PMT = ? | FV = 310,000 |

Payment = $887.74

23. You are trying to accumulate a $40,000 down payment to purchase a home. You can afford to save $1,000 per quarter. If these quarterly investments earn an annual rate of 7 percent, how many quarters will it take to reach your goal?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = ? | I/YR = 7/4 | PV = 0 | PMT = -1,000 | FV = 40,000 |

N = 30.57 quarters or 7.65 years

24. You have signed a new lease today to rent office space for five years. The lease payments are fixed at $4,500 per month for the first two years, but rise to $5,500 per month in years 3-5. What is the present value of this lease obligation if the appropriate discount rate is 8 percent?

Present value of $5,500 per month for five years:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 60 | I/YR = 8/12 | PV = ? | PMT = 5,500 | FV = 0 |

Present value = $273,060 (this is an annuity due; use “begin” mode)

Present value of $1,000 per month for two years:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 24 | I/YR = 8/12 | PV = ? | PMT = 1,000 | FV = 0 |

Present value = $22,258 (this is an annuity due; use “begin” mode)

Total PV of lease = $273,060 - $22,258 = $250,802.

25. Suppose you are going to receive $10,000 per year for five years. The appropriate interest/discount rate is 11 percent.

1. What is the present value of the payments if they are in the form of an ordinary annuity?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 5 | I/YR = 11 | PV = ? | PMT = 10,000 | FV = 0 |

PV = $36,959

What is the present value if the payments are an annuity due?

PV = $41,024

1. Suppose you plan to invest the payments for five years. What is the future value if the payments are an ordinary annuity?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 5 | I/YR = 11 | PV = 0 | PMT = 10,000 | FV = ? |

FV = $62,278

What if the payments are an annuity-due?

FV = $69,129

**CHAPTER 2**

**Legal Foundations to Value**

**Test Problems**

1. Which of the following is not a form of property right?

d. License

1. Which of these easements is most likely to be an easement in gross?

d. Power line easement

1. Rules used by courts to determine whether something is a fixture include all except:

c. Law of capture.

1. Which of the following is a titled estate?

e. All of these.

1. Which of these forms of co-ownership could best be described as “normal ownership,” except that multiple owners share identically in one bundle of rights?

a. Tenancy in common

1. Which of these marriage-related forms of co-ownership gives each spouse a one-

half interest in any property that is “fruits of the marriage”?

c. Community property

1. Which of these liens has the highest priority?

c. Property tax lien

1. Restrictive covenants for a subdivision usually can be enforced by:

d. *a* and *b*, but not *c*

1. Timeshare programs can involve which of the following claims or interests?

e. All of these are possible

1. Every condominium buyer needs to know the details of which document(s):

d. *a* and *b*, but not *c*

**Study Questions**

1. Explain how rights differ from power or force, and from permission.

*Solution*: Rights have three characteristics. First, rights are claims or demands that our government is obligated to enforce. Second, rights are nonrevocable and cannot be canceled, ignored, or otherwise lessened by other private citizens. Third, rights are enduring and do not fade away with time.

Rights are different from power because the government is obligated to honor and support the claims arising from rights. Government will not support claims without right, based merely on the use of force or threat. The government is obligated to defend property rights in subsequent generations, and it does not have the power to abandon this obligation.

Unlike permission, which is revocable, rights are nonrevocable and cannot be taken away or lessened in stature by other private citizens.

1. A developer of a subdivision wants to preserve the open space and natural habitat that runs along the back portion of a series of large lots in the proposed subdivision. He is debating whether to use restrictive covenants to accomplish this or to create a habitat easement on the same space. What are the pros and cons of each choice?

*Solution*: A developer may choose to use restrictive covenants to limit the use of the land for environmental purposes, while maintaining the quality, stability, and value of the surrounding lots. Restrictive covenants are strictly private because only parties of interest can enforce the covenant. In the case of an isolated deed restriction, the owner who created the restriction or that owner's heirs are the only persons who can enforce the restriction.

Court decisions frequently follow common law, which holds that property should be used productively, and favor fewer restrictions over the use of land. Whether the restriction is in an isolated deed or part of a general set of subdivision restrictions, the courts have been reluctant to maintain them for an unreasonably long time. Even in states where no time limit exists, courts may refuse to enforce restrictions due to changing neighborhood character, abandonment (neglect of enforcement), and changing public policy. In most states, it is difficult to maintain individual restrictive covenants for more than a few decades, and several states have enacted time limits of 20 years or so.

On the other hand, the developer may choose to use a habitat easement on the property. A habitat easement can limit the use of the land for the specific purpose of protecting the environment. An easement in gross, defined as the right to use land for a specific, limited purpose unrelated to any adjacent parcel, will achieve the developer’s objective. The easement can be transferred to another owner without the transfer of a parcel of land. The easement is less likely to “fade away.” Courts are more likely to honor and protect the easement than a neglected restrictive covenant.

1. Why are restrictive covenants a good idea for a subdivision? Can they have any detrimental effects on the subdivision or its residents? For example are there any listed in the chapter that might have questionable effects on value of a residence?

*Solution*: Restrictive covenants are used most often in subdivision developments to ensure the quality, stability, and value of the lots. However, they can sometimes have detrimental effects on the subdivision. For example, adding a free standing garage or a chain link fence to one’s residence may ideally increase the value, but the existence of restrictive covenants may limit a homeowner’s ability to increase the property’s value in that manner. Excessive restrictive covenants may diminish the property’s value by effectively reducing the rights of the owner. Restrictive covenants may also become obsolete if the character of the neighborhood changes and hinder a property owner’s rights.

1. The traditional common law concept of landlord-tenant relationship was that the landlord’s obligation was simply to stay off the property and the tenant’s obligation was to pay the rent. Explain why this is an obsolete arrangement for apartment residents in an urban society.

*Solution*: Historically, the common law application of a landlord-tenant relationship centered on agrarian relationships formed in pre-industrial England. Modern society views residential tenancy as the provision of services. It can be difficult or impossible for one tenant, alone, in an apartment complex to control pests or repair a roof, etc. Thus, the obligation of the landlord must be more than merely to “stay away” from the property. States have enacted elaborate residential landlord-tenant laws that take great strides in defining the rights and obligations of both parties under a residential lease. Laws address such matters as obligations for care and repair of the premises, rights of entry, handling of deposits, notification requirements, and many other matters.

1. A friend has an elderly mother who lives in a house adjacent to her church. The church is growing, and would welcome the opportunity to obtain her house for its use. She would like to support the needs of her church, but she does not want to move and feels strongly about owning her own home. On the other hand, your friend knows that she will not be able to remain in the house many more years, and will be faced with moving and selling within a few years. What options can you suggest as possible plans to explore?

*Solution*: One possible option is to unbundle the fee simple absolute into an ordinary life estate and remainder estate. The church can purchase a remainder estate while the owner retains a life estate. The owner thereby receives either additional income or, if the remainder is donated, a tax deduction. This simplifies the eventual settlement of her estate, while assuring the continued right to occupy her home. At the time of her death the remainder estate becomes a complete fee simple absolute owned by the church. Another possible option is an outright sale to the church and the creation of a tenancy for years in which the elderly mother rents the property from the church, creating a leasehold estate for a period of time.

1. A friend has owned and operated a small recreational vehicle camp on a lake in Daytona Beach, Florida. It is close to the ocean and close to the Daytona Speedway, home of the Daytona 500 and a host of other prominent races. The occupants are very loyal, making reservations far in advance, and returning year after year. She is asking your thoughts on whether to continue the camp as a short-term rental operation, or to convert it and sell the parking spaces as condominium parking spaces, or to convert to condominium time-share lots. What thoughts would you offer?

*Solution*: Maintaining ownership of the small recreational vehicle camp provides the owner continued control of the property, but she also retains responsibility for property management and expenses associated with running the camp. Converting the space to condominium parking would require an effective transfer of the property from your friend to the condominium association. The land on the lake would no longer belong to your friend, and she would lose any future use of the land. In addition, bylaws and a condominium declaration must be created. Time-share lots would divide the estate into separate time intervals. By creating timeshare condominium lots in a tenancy for years, the land could revert to your friend after a set number of years.

1. In the United States, the bundle of rights called real property seems to have gotten smaller in recent decades. Explain what has caused this. Why is it good? Why is it bad?

*Solution*: The bundle of rights has gotten smaller in recent decades because of the government’s increased use of its police power. The government has the duty to protect the health, safety, and welfare of the American people. Additionally, after the 1970’s, the consciousness of “Spaceship Earth” alerted many Americans to environmental concerns and the potential adverse environmental and ecological effects of some land uses. On the other hand, excessive regulations interfere with property owners’ rights to do as they please with their property. If the exercise of police power goes too far, it becomes a "taking," which requires just compensation.

**CHAPTER 3**

**Conveying Real Property Interests**

**Test Questions**

1. Which of these is not a requirement of a valid deed?

b. Competent grantee.

1. The interest being conveyed by a deed is specified in the:

b. Habendum clause

1. The “highest quality” form of deed is the:

a. General warrantee deed.

1. A deed used mainly to clear up possible “clouds” or encumbrances to title (conflicting interests) is the:

d. Quitclaim deed.

1. If a landowner sells the front part of a parcel of land, retaining the back portion as a “land-locked” parcel, and if there is an existing informal path across the front parcel to the back one, the seller is likely to retain the path as a (an):

c. Implied easement by prior use.

1. If a neighboring land owner drives across a person’s land openly and consistently for a number of years the neighbor may acquire an easement by:

d. Prescription

1. If documents conveying interests in real property are properly recorded in the public records, then they are binding or enforceable on all persons, regardless of whether those persons are aware of the documents, by the:

c. Doctrine of constructive notice.

1. Which of these is a widely used form of “evidence of title”?

b. Title insurance commitment.

1. The most common form of legal description for urban residential property is the:

c. Plat lot and block number.

1. Factors that make it uniquely difficult to establish clear title in real estate as compared to most personal property items include:

b. Length of the ownership history in real estate.

**Study Questions**

1. Explain how title insurance works. What risks does it cover? Who pays, and when? What common exceptions does it make?

*Solution*: Title insurance protects an owner (or lender) from legal challenges or complications with title. Title insurance protects a grantee (or mortgagee) against the legal costs of defending title, and against loss of the property in case of an unsuccessful defense. It cannot save a title that is genuinely false. However, it indemnifies the policyholder against litigation costs, and compensation for loss of the property, should that occur. In many localities it is customary for the seller to pay for title insurance, though this is negotiable. For a mortgage policy protecting a lender, the borrower pays.

There are important limits or exceptions to title insurance. First, it is not hazard insurance; that is, it does not protect the owner from the threat of physical damage to the property. It only protects against legal attack on the owner’s title. Second, title insurance typically excepts any facts that would be revealed by an inspection and survey of the property.

1. If a grantee obtains title insurance, what value, if any, is there in the covenant of seizen in a warranty deed?

*Solution*: If a grantee has title insurance, the covenant of seizing remains an indication that the grantor really believes that they hold good title. The title insurer can still bring action against the grantor of a false title, even though the grantee has been indemnified for loss of title and property.

1. The use of Torrens certificates, never large in the U.S., has diminished in recent years. Explain how marketable title laws, recently adopted in many states, might have made Torrens certificates less interesting and useful.

*Solution*: The idea of a Torrens certificate was to eliminate the need for a search of historical public records to affirm chain of title. Marketable title laws may have accomplished this objective in that they usually establish a “root” transaction that generally is taken for face value as the status of title at that time (say, 30 years earlier). Unless there is evidence to the contrary, title search need not reach back earlier than the “root” transaction. Thus, much of the value of the Torrens certificate is accomplished without the administrative costs of maintaining an elaborate certificate updating process.

1. Name at least six adverse (conflicting) claims to property or other title defects, that will not be evident from a search of property records but which might be detected by inspection of the property and its occupants.

*Solution*: Six adverse or conflicting claims to property that will not appear in a search of records include these: (1) claim to adverse possession, (2) easement by prescription, (3) easement of necessity, (4) easement by estoppel, (5) leasehold claim, and (6) easement for extraction of crops or mineral rights.

1. Why might it be advisable to require a survey in purchasing a 20-year-old home in an urban subdivision?

*Solution*: A survey can be useful, even in a fairly recent subdivision, to affirm that fences are not encroaching, or that an addition to a structure does not violate a setback. In addition, it is generally good for a purchaser to know the boundaries of the acquired property because often fences and shrubs can create false impressions of boundary locations.

1. Describe the shaded property by government rectangular survey.

*Solution*: The East one-half of the SW one-fourth of the NW one fourth, plus the south one half of the NW one-fourth of the NW one fourth of section 14, Tier 11S and Range 21E.

1. Some real estate industry persons have suggested that it is good to require a title Insurance commitment as evidence of title for rural property, but that it satisfactory to use the less costly abstract and attorney’s opinion as evidence of title for a residence in an urban subdivision. Discuss the merits or risks of this policy.

*Solution*: A platted urban subdivision effectively has a relatively short history in which title could become “clouded.” The creation of the subdivision, by implication, represents a point in time where there was very little question about the status of title. Thus, only what has happened to the property subsequently may put marketable title at risk. This greatly shortens the portion of the title history that may contain threats to title. Thus, title insurance may not be as valuable as with unplatted land.

# Chapter 4

# Government Controls and Real Estate Markets

# Test Problems

Answer the following multiple choice questions.

1. Zoning is an exercise of which type of general limitation on property rights?

c*.* Police power.

1. A comprehensive plan usually deals with which of the following elements?

e. All of the above.

1. Property taxes are a main source of revenue for:

e. Both local governments and school districts.

1. The authority for approving site plans for large projects ultimately rests with the:

a. The elected governing commission or council.

1. The most accurate conclusion about the regessivity of the property tax is that it is:

d*.* Regressive, but when benefits are considered, the net result may not be regressive.

1. Traditional land use controls (pre-1970) include:

e. All three: a, b, and c.

1. A new form of land use control that replaces zoning by land uses with separation of building/development types is:
2. Form-based zoning.
3. “New urbanism” is a term used to describe:

d. The theory that residential and commercial uses should be integrated, streets and

parking should discourage through traffic, and neighborhoods should be pedestrian oriented.

1. Elements of traditional zoning include all *except*:

a. Performance Standards.

1. Externalities in land use include all *except*:

d. Inability to judge the quality of a structure, once built.

# Study Questions

1. Assume that you own a small apartment building close to a major commercial street and a service station. You learn that there has been a major leak of underground storage tanks from the service station, and the gasoline has spread onto and below the surface of your property. Discuss sources of value loss to your property from the contamination.

*Solution:* Most importantly, as the owner, you might be responsible for the cleanup on the property despite not causing the contamination. Second, the potential resale value is reduced because the site is contaminated. Further, the site may be tarnished in the future, even if the hazardous materials were cleaned up.

1. A local businessman has applied for a permit to construct a bar that will feature “adult dancing” in a commercially zoned area across the street from your residential subdivision. As an owner of a $350,000 house within the subdivision, would you favor or oppose this development? What effect do you think it could have on the value of your property? If you were opposed, how could you fight approval of the permit?

*Solution:* Constructing an adult establishment near a residential area creates a negative externality to the surrounding neighborhood. The development probably will adversely affect home values in the residential subdivision. Opponents to the approval of the permit should argue that zoning laws should exist to protect the value and stability of single-family subdivisions, and homes unprotected by zoning risk a loss in property value if the business locates nearby. Various restrictions exist within the commercial zoning classification, and the adult bar should only be permitted in specific zoned areas that are located away from residential areas.

1. A medium-size city has proposed to build a “greenway” along a creek that flows through the center of the city. The city wants to clear a strip about 50 feet wide and construct a paved path for bicycles and foot traffic (walkers and joggers). Proponents claim that it would be a highly desirable recreational facility for the community, while a very vocal and insistent group of opponents claims that it would degrade the environment and open properties along the creek to undesirable users and influences.

Identify some specific positive and negative aspects of the proposal. Would you be in favor of the proposal, if you lived in the city? Would it make a difference if you lived along the creek?

*Solution:* Positive aspects of the greenway include economic growth of an area and a recreational facility for the community. Negative aspects include increased pollution, noise, traffic and possibly crime. In addition, it is unclear what would happen to property values along the creek. The city needs to demonstrate that the proposed project will not degrade the environment. If I lived in the city, I would be in favor of the proposal because of the increased recreational opportunities. If I lived along the creek, I would not be in favor of the proposal because I am not sure how the “greenway” will affect my property’s value and my security.

1. The main argument traditionally advanced in favor of zoning is that it protects property values. Do you believe this contention? If so, how does zoning protect property values? If you do not believe the contention, why not?

*Solution:* Zoning protects property values by ensuring that an undesirable land use will not exist in a residential or other non-compatible area. Zoning is intended to add predictability and stability to the land uses in an area. However, if a zoning plan conflicts with the natural economic land use pattern, it can cause inefficient distortions in land use. For example, zoning laws may force household services such as grocery stores, delicatessens or hair salons to be excessively distant from residential neighborhoods.

1. Do you believe that the owners of properties contaminated by events that occur on another property (gasoline leakage or spills, for example) should be responsible for cleaning up their properties? Why or why not? If not, who should pay for the cleanup?

*Solution:* The Federal Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”) holds the owner or operator of a site as one of the types of “responsible parties” for contamination. Under the current law, innocent parties may be hurt by the actions of others, which seems inequitable. For example, a property owner may not even be aware of how a nearby property owner is contaminating the land. However, from a broader public policy perspective, it is easier to hold the current property owner accountable for the condition of a property. Furthermore, such a requirement encourages potential purchasers of property to undertake the necessary due diligence prior to committing to a real estate purchase.

1. The property tax has been criticized as an unfair base for financing public schools. Areas that have high property values are able to pay for better schools than areas having lower property values. Thus, there is an inequality of education opportunities that tends to perpetuate educational and social disadvantages for those who live in low-income areas.
   1. Do you agree or disagree?
   2. How could school financing be modified to provide more equal funding among all regions of a state?

*Solution:* Utilizing property tax revenue to finance public schooling may create an inequality of education opportunities, assuming that the difference in tax revenue between wealthy and lower-income communities is not offset by other sources of revenue. This issue is further complicated by the fact that property values are local by nature and vary from community to community. School financing could be modified to a more standardized and equitable methodology, such as a statewide taxation and funding system rather than a local system. However, statewide school funding may tend to reduce local autonomy in schools, an adverse effect from the view of those school districts that are relatively self-sufficient. Countering this concern is the argument that citizens everywhere in a state benefit as the quality of the poorest educational opportunity is raised.

1. A property tax owner who owes 8 mills in school taxes, 10 mills in city taxes, and 5 mills in county taxes and who qualifies for a $25,000 homestead exemption would owe how much tax on a property assessed at $80,000?

*Solution*:

|  |  |  |
| --- | --- | --- |
| Assessed Value |  | $80,000 |
| Less: Homestead Exemption |  | ($25,000) |
| Taxable Value |  | $55,000 |
|  |  |  |
| Less: Taxing Authority Levies | Millage Rate | Taxes Levied |
| School district | 8.00 | $440 |
| City | 10.0 | $550 |
| County | 5.00 | $275 |
|  |  |  |
| Total | 23.0 | $1,265 |

Chapter 5

**Market Determinants of Value**

**Test Problems**

1. The “gravity” that draws economic activity into clusters is:

c. Demand for access or proximity.

1. Spatial or distance relationships that are important to a land use are called its:

a. Linkages.

1. Cities have tended to grow where:

a. Transportation modes intersect or change.

1. The economic base multiplier of a city tends to be greater if the city is:

a. Larger.

1. The best example of a base economic activity would be a:

e. Regional sales office.

1. Important supply factors affecting a city’s growth or growth potential include all *except* the:
   1. Unemployment rate.
2. Which of these are true about agglomeration economies?

e. All of the above.

1. Which of these influences will decrease the level of a bid-rent curve at the center of the city?

a. Faster travel time.

1. In a system of bid-rent curves, assuming that households are identical except for the feature noted, which of these prospective bidders will bid successfully for the sites nearest to the CBD?

a. Households with the greatest number of commuting workers.

1. A large university is an example of what kind of economic phenomenon?

c. Industry economies of scale.

**Study Questions**

1. List five major economic base activities for your city of residence.

*Solution*: Is MSA specific.

1. Find the historical population figures for your community for the 20th century. Create a chart by ten-year intervals. Determine the most rapid periods of growth, and try to discover what caused them. (One source of the necessary population numbers is the U.S. Census website: “Population of the 1-00 Largest Cities and Other Urban Places in the United States: 1790 to 1990”)

*Solution*: The solution to this question is MSA specific.

1. On the U.S. Census web site, use the approach shown in the chapter in Explore the Web to access the American Community Survey. For your county, and for your state find the distribution of income for all households. Graph the distributions using percentage for each income interval. Which is higher, county or state?.

*Solution*: This solution is MSA specific. However, as an example, in Alachua County , Florida and for Florida, the distributions are as shown below.



Alachua County, a university community has a higher concentration of lower income households than the state, reflecting, in part, student households.

.

4. Identify at least five locational attributes that are important in the location of a fast-food restaurant. Compare notes with someone in the industry such as a local restaurant manager or owner.

*Solution*: Likely locational requirements for a fast-food restaurant could include these: visability, high traffic counts, easy entry and exit from the site, good proximity to households or places of work, and a location that affords a “locational monopoly” in that a competitor cannot “intercept” the available market.

5. Perfect Population Projections Inc. (PPP) has entered into a contract with the city of Popular, Pennsylvania, to project the future population of the city. Popular has become a popular place in recent years as indicated by the following data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Total** | **Total** | **Basic** | **Nonbasic** |
| **Year** | **Population** | **Employment** | **Employment** | **Employment** |
| 2005 | 50,000 | 25,000 | 6,250 | 18,750 |
| 2006 | 53,000 | 26,500 | 6,625 | 19,875 |
| 2007 | 57,000 | 28,500 | 7,125 | 21,375 |
| 2008 | 65,000 | 32,500 | 8,125 | 24,375 |
| 2009 | 70,000 | 35,000 | 8,750 | 26,250 |
| 2010 | ? | ? | 9,000\* | ? |

\*Estimated from surveys

The contract states that PPP must project Popular’s population for the year 2005 using both a simple linear method and an economic base analysis. The ratio of population to total employment is 2.0833.

Your help is needed!

*Solution*: Using a simple linear method, the growth trend in the population would be extended (extrapolated) one year. The extrapolation could be done graphically, which amounts to drawing a line through the dots, and extending them one year. This would result in a population for 2010 of approximately 75,000. Alternatively, it could be done by simple linear regression, resulting in an estimated annual incremental growth of 5,900. Thus the population by linear projection would be approximately 76,000. On the other hand, a projection using the economic base approach starts with the ratio of population to base employment. For Popular, this ratio is unvarying at 8.00. By the logic of the model, this ratio will continue. Thus, a projected employment of 9,000 for 2005 implies a population of 9,000 x 8 = 72,000.

CHAPTER 6

**Forecasting Ownership Benefit and Value: Market Research**

**Test Problems**

1. Factors that affect housing market segmentation include all *except*:

d. Household unemployment status.

1. The process of creating a “market-defining story” includes all of these questions except:

d. What is the price?

1. The cycle of real estate market research starts with:

a. Creating a market defining story.

1. Features of an office building that may be important to one market segment or another include:

e. All of the above.

1. A strong assertion about the large amount of data seemingly available for real estate market research is that most of it is:

c. Irrelevant to a given analysis.

1. The approach to real estate market research advocated in this chapter starts with the:

e. The nature of the property.

1. A powerful tool for managing, manipulating, and displaying location-specific data is:

d. Geographic information systems.

1. A very sophisticated, data intensive, and statistically intensive method of examining market segmentation is known as:

d. Psychographic research.

1. Causes of real estate cycles include:

d. Both a and b, but not c.

1. Data used in the market research cases in this chapter that are publicly available over the Internet include all of the following *except*:

d. Data on job location from the National Transportation board.

**Study Questions**

1. On the U.S. Census web site, use the approach shown in Explore the Web, Chapter 5, to access the latest American Community Survey. For your county, find the distribution of reported house values for owner occupied residences.

*Solution*: Is county specific. Below is an example result for Alachua County, Florida.



1. If you were looking for an apartment at this time, what are six non-locational requirements that you would consider important?

*Solution:* Six non-locational requirements include an appealing floor plan and layout, community amenities, security features, desirable tenant mix, adequate parking, and construction quality.

1. Select a site in your city that is in a mixed use or non-residential area, and either is vacant or appears to be ready for change (e.g., structure partially used or vacant, or in need of refurbishing). Go the site during the morning commuting period, on a business day. Situate yourself at or near the site and observe the activity at and around the site. Pay particular attention to why people pass the site-where they are coming from and where they are going. Note any nearby land uses or pedestrian flows that could potentially involve the site. Then explore the area around the site for a block or so in each direction, and record on a simple map the main patterns of traffic flow, and the broad variations in the land uses. Finally, after at least one observation session of 30 minutes, record your main impressions, and any thoughts you have concerning the potential use of the site. (Hint: A good way to select a site might be to go to a commercial broker or appraiser and ask them about a site that they are intrigued with. It gives you an interesting industry contact, and another perspective on the problem.)

*Solution*: Is city specific.

1. Select a property of interest to you, or to an industry contact, for which market research would be interesting. Examine the property, collect what information is available about it, and then write a market defining story for the property using the questions from the chapter as a guide.

*Solution*: Is case specific.

1. University City is a town of more than 200,000 persons, with over 50,000 university and community college students. It has over 30,000 apartment units which, with one or two exceptions, are garden apartments with a maximum of three floors. Except for buildings within or immediately adjacent to the university medical center, the football stadium, and the two graduate student dorms, only two other buildings in the University City exceed five floors. A developer proposes to introduce two 24-story apartment buildings halfway between the downtown and the university, which are about 2.5 miles apart. One tower, would be targeted to undergraduate students and the other to graduate students. The downtown consists of little more than government offices, mostly local and county. What questions should the developer ask in order to create a “market defining story” for the twin towers?

*Solution*: This story needs to answer the following questions:

1. What is the real estate product under consideration?
2. Who are the customers (target market)?
3. Where are the customers? (What is the market area?)
4. What do the customers care about? (What aspects of the product?)
5. Who are the competitors?

**CHAPTER 7**

**Valuation Using the Sales Comparison and Cost Approaches**

**Test Problems**

1. The final price for each comparable property reached after all adjustments have been made is termed the:

b. Final adjusted sale price.

1. Which of the following is not included in accrued depreciation when applying the cost approach to valuation?

d. Tax depreciation

1. In the sales comparison approach, the value obtained after reconciliation of the final adjusted sales prices from the comparable sales is termed the

d. Indicated opinion of value.

1. A new house in good condition that has a poor floor plan would suffer from which type of accrued depreciation?

d. Incurable functional obsolescence

1. To reflect a change in market conditions between the date on which a comparable property sold and the date of appraisal of a subject property, an adjustment must be made for which of the following?

b. Market conditions.

6. Under the Cost Approach to appraisal, the estimated expenditure required to construct a building with equal utility as the one being appraised is termed the \_\_\_\_\_\_\_\_.

b. Replacement cost

1. You find two properties that have sold twice within the last two years. Property A sold 22 months ago for $98,500; it sold last week for $108,000. Property B sold 20 months ago for $105,000; it sold two weeks ago for $113,500. Assuming no compounding, what is the average monthly rate of change in sale prices?
2. 0.42%

Property A: $108,000/$98,500 = 1.096447

Property B: $113,500/$105,000 = 1.08095

Average monthly increase with no compounding:

Property A: 0.096447/22 = 0.00438

Property B: 0.08095/20 = 0.00405

0.00843/2 = .004215 or 0.42%

Average monthly increase with compounding:

Property A: 1.096447(1/22) = 1.004194 or 0.004194

Property B: 1.08095(1/20) = 1.00390 or 0.00390

0.008094/2 = .004047 or 0.40%

1. A comparable property sold 10 months ago for $98,500. If the appropriate adjustment for market conditions is 0.30% per month (with compounding), what would be the adjusted price of the comparable property?

d. $101,495

Without compounding:

$98,500\*(1+(0.003x10)) = $98,500\*1.03 = $101,455

With compounding:

$98,500\*(1.003)10 = $98,500\*1.030408 = $101,495.21 or $101,495

1. A comparable property sold six months ago for $150,000. The adjustments for the various elements of comparison have been calculated as follows:

Location: -5 percent

Market conditions: +8 percent

Physical characteristics: +$12,500

Financing terms: -$2,600

Conditions of sale: 0

Property rights conveyed: 0

Use: None

Nonrealty items: -$3,000

Making the adjustments in the order suggested in Exhibit 7-6, what is the comparable’s final adjusted sale price?

a. $160,732

|  |  |  |  |
| --- | --- | --- | --- |
| Transaction price |  |  | $150,000 |
| Adjustment for financing terms | Minus |  | $2,600 |
| Adjusted price |  |  | $147,400 |
| Adjustment for market conditions | Plus 8% |  | $11,792 |
| Adjusted price |  |  | $159,192 |
| Adjustment for location | Minus 5% |  | $7,959.60 |
| Adjusted price |  |  | $151,232.40 |
| Adjustment for physical characteristics | Plus |  | $12,500 |
| Adjusted price |  |  | $163,732.40 |
| Adjustment for nonrealty items | minus |  | $3,000 |
| Final adjusted sale price |  |  | $160,732 |

1. A property comparable to the single-family home you are appraising sold three months ago for $450,700. You have determined that the adjustments required for differences in the comparable and subject property are as follows:



What is the final adjusted sale price of the comparable? Make the adjustments in the order suggested by Exhibit 7-6.

b. 445,605

****

**Study Questions**

1. What is the theoretical basis for the direct sales comparison approach to the market valuation?

*Solution*: The direct sales comparison approach to the market valuation relies on value judgments made by willing buyers and sellers. Therefore, this method uses market-driven information. The sales comparison approach involves comparing a subject property with recently sold comparable properties.

2. What main difficulty would you foresee in attempting to estimate the value of a 30-year old property by means of the cost approach?

*Solution*: The cost approach assumes that the market value of a new building is similar to that of constructing the building today, minus accrued depreciation. Calculating an accurate estimate of accrued depreciation for a 30-year old property is difficult because physical deterioration/depreciation, functional obsolescence, and external/economic depreciation are likely to increase as the building ages.

3. The cost approach to market valuation does not work well in markets that are overbuilt. Explain.

*Solution*: In an overbuilt market, the market value of an existing property is frequently less than the construction cost of the property. That is, the adjustment needed for economic depreciation is large and difficult to estimate.

4. What is meant by functional obsolescence? Could a new building suffer from functional obsolescence?

*Solution*: Functional obsolescence refers to a building’s loss in value resulting from changes in tastes, technical innovations, or market standards. Typically, functional obsolescence is associated with a building’s decline in utility through the passage of time, but it is possible for a newer building to suffer from functional obsolescence. For example, costumer preferences and demands may change soon after a relatively new building is completed.

5. Why is an estimate of the developer’s fair market profit included in the costs estimate?

*Solution*: In practice, developers and contractors frequently include their profit in the calculated cost amount because a fair and reasonable profit amount is considered a cost of constructing the improvements.

6. Replacement costs have been estimated as $350,000 for a property with a 70-year economic life. The current effective age of the property is 15 years. The value of the land is estimated to be $55,000. What is the estimated market value of the property using the cost approach, assuming no external or functional obsolescence?

*Solution*:

Replacement cost 350,000

Less: Depreciation (75,000) [$350,000 x 15/70]

Depreciated Cost of Building Improvements 275,000

Add: Estimated Value of Site 55,000

Indicated Value by the Cost Approach 330,000

7. What is a self-contained appraisal report?

*Solution*: A self-contained appraisal report is the document prepared by the fee appraiser to covey the client his opinion of value. This report contains the appraiser’s final estimate of value, the data forming the foundation of this estimate, and the calculations supporting the estimate.

8. What is the difference between market value and investment value?

*Solution*: Market value is the most probable selling price; investment value is the value to a particular investor.

9. Contrast self-contained appraisal reports, summary appraisal reports, and restricted appraisal reports.

*Solution*: A self-contained appraisal report includes all the detail and information that were used by the appraiser to derive his or her estimate of market value or the other conclusions within the report. A summary appraisal reports simply summarizes the conclusions of the appraisal. The majority of the data and techniques used in the appraisal are kept in the appraiser’s work file. A restricted appraisal reports provides a minimal discussion of the appraisal with many references to the appraiser’s work file/international documentation.

10. How would you go about estimating the current market value of a publically-traded common stock? Would this take more or less time than most real estate appraisals?

*Solution:* I would simply observe the price at which the stock is currently selling or the closing price of the stock at the end of the most recent trading day. This would take significantly less time than a formal real estate appraisal.

11. How would you define the highest and best use of a property?

*Solution*: The highest and best use of a property is defined as that use found to be (1) legally permissible, (2) physically possible, (3) financially feasible, and (4) maximally productive (i.e., yielding the greatest benefit to an owner). In short the HABU is the use that would maximize the value of the property.

12. In the sales comparison approach, if the comparable property is superior to the subject property in some way, is an upward or downward adjustment to the sale price of the comparable required? Explain.

*Solution*: If the comparable property is superior to the subject property in some way, a downward adjustment must be made to the sale price of the comparable to account for this difference.

13. A comparable property sold recently for $250,000. The comparable contained an estimated $3,000 in non-reality items. In addition, the appraiser estimates that market values (conditions) have increased a total of 2 percent since the sale of the comparable. What is the adjusted price of the comparable if the dollar adjustment for non-reality items is made before the market conditions adjustment? What is the adjusted price of the comparable if the percentage adjustment for market conditions is made before the adjustment for non-reality items?

*Solution*:

Adjusted price of the comparable if the dollar adjustment for non-reality items is made before the market conditions adjustment.

|  |  |  |
| --- | --- | --- |
| Sale price of comparable | $250,000 |  |
| Adjustment for non-realty items | - 3,000 |  |
| Adjusted price | 247,000 |  |
| Adjustment for market (value) conditions | + 4,949 | = 0.02 x $247,000 |
| Adjusted sale price of comparable | $251,949 |  |

Adjusted price of the comparable if the percentage adjustment for market conditions is made before the adjustment for non-reality items.

|  |  |  |
| --- | --- | --- |
| Sale price of comparable | $250,000 |  |
| Adjustment for market (value) conditions | + 5,000 | = 0.02 x $250,000 |
| Adjusted price | 255,000 |  |
| Adjustment for non-realty items | - 3,000 |  |
| Adjusted sale price of comparable | $252,000 |  |

#14

You are appraising a single-family residence located in the Huntington neighborhood at 4632 NW 56th Drive. The property is being acquired by a mortgage applicant and you have been asked to appraise the property by the lender. Seven potential comparable sales were initially identified. However, three of these seven were highly similar to the subject property in their transactional, physical and locational characteristics. You therefore decided to exclude the other four transactions from the comparable set.

The elements of comparison you used to compare and adjust the sale prices of the comparable properties are listed in the market data grid below. The property rights being conveyed in the acquisition of the subject property are fee-simple absolute. Conventional mortgage financing will be used by the purchaser and the acquisition appears to be an arm’s length transition. Thus, no adjustments need to be made to the sale prices of the comparable properties for the type of property rights conveyed, financing terms, or conditions of sale. However, the buyer of comparable 2 was aware that she would have to replace one of the air conditioning units immediately after acquiring the property (which she did); thus, she was able to negotiate a $3,000 price reduction from the seller.

Comparable 1 sold three months ago, while comparables 2 and 3 sold six months ago. Based on your knowledge of recent price appreciation in this market, you have decided that comparable 2 would sell for 2 percent more if sold today and that comparables 2 and 3 would sell for 4 percent more if sold today. The subject property is located in Huntington, as is comparable 1. However, comparables 2 and 3 are located in Kensington and Millhoper, respectively. Although Huntington is a high-end neighborhood, both Kensington and Millhoper are generally considered to be slightly more desirable, In fact, homes in these two neighborhoods generally sell for about a 3 percent price premium relative to similar homes in Huntington.

In these neighborhoods, an incremental square foot of lot size or living area is worth about $20 per square foot and $80 per square foot respectively. Each year of effective age reduces the value of properties in this market by about $3,000 per year. You experience suggests that each additional half-bath is worth $500; each additional full bath $1,000. Additional garage spaces, wood decks, and pools in these neighborhoods are worth $8,000, $1,000, and $12,000, respectively. No significant non-realty items were included in the comparable transactions.



Based on the above discussion of the elements of comparison, complete an adjustment grid for the three comparable properties. What is the final adjusted price (indication of the subject’s value) for comparable 1, 2, and 3?



#11

Assume the market value of the subject site (land only) is $120,000. You estimate that the cost to replicate the improvements to the subject property would be $428,000 today. In addition, you estimate that accrued depreciation on the subject is $60,000. What is the indicated value of the subject using the cost approach?



**CHAPTER 8**

**Valuation Using the Income Approach**

**Test Problems**

1. Which of the following expenses is not an operating expense?

d. Mortgage payment.

1. An overall capitalization rate (Ro) is divided into which type of income or cash flow to obtain an indicated market value?

a. Net operating income (NOI).

1. Which of the following types of properties probably would not be appropriate for income capitalization?

e. Public school.

1. Estimated capital expenditures

d. are subtracted to compute NOI in a below-line treatment.

1. An appraiser estimates that a property will produce NOI of $25,000 in perpetuity, yo is 11 percent, and the constant annual growth rate in NOI is 2.0 percent. What is the estimated property value?

a. $277,778.

1. If a comparable property sells for $1,200,000 and the effective gross income of the property is $12,000 per month, the effective gross income multiplier (*EGIM*) is

b. 8.33

1. Which of the following statements regarding capitalization rates on commercial real estate investments is the most correct?

b. Cap rates vary positively with the perceived risk of the investment.

1. The methodology of appraisal differs from that of investment analysis primarily regarding

e. Point of view.

Use the following information to answer questions 9-10.

You have just completed the appraisal of an office building and have concluded that the market value of the property is $2,500,000. You expect Potential Gross Income (PGI) in the first year of operations to be $450,000; vacancy and collection losses to be 9 percent of PGI; operating expenses to be 38 percent of Effective Gross Income (EGI), and capital expenditures to be 4 percent of EGI.

9. What is the implied going-in capitalization rate?

a. 9.5 percent

10. What is the effective gross income multiplier (EGIM)?

b. 6.11

**Study Questions**

1. Data for five comparable income properties that sold recently are shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Property | NOI | Sale Price | Overall Rate |
| A | $ 57,800 | $ 566,600 | 0.1020 |
| B | 49,200 | 496,900 | 0.0990 |
| C | 63,000 | 630,000 | 0.1000 |
| D | 56,000 | 538,500 | 0.1040 |
| E | 58,500 | 600,000 | 0.0975 |

What is the indicated overall rate (RO)?

*Solution*: The indicated overall cap rate of 10.05 percent is the simple average of the overall rates for the five comparable properties.

1. Why is the market value of real estate determined partly by the lender’s requirements and partly by the requirements of equity investors?

*Solution*: Real estate investments are frequently financed using a combination of equity and mortgage debt. A real estate investment can be viewed as a joint investment made by both the lender and equity investor, and therefore, both parties’ required rates of return are relevant. Consequently, the investor’s minimum required rate of return is heavily influenced by the availability and terms of financing provided by lenders, as well by evaluating the required returns on alternative investments of similar risk. In general, a levered investment has greater risk than an unlevered investment, which increases the investor’s required rate of return.

1. Assume a reserve for non-recurring capital expenditures is to be included in the pro forma for the subject property. Explain how an above-line treatment of this expenditure would differ from a below-line treatment.

*Solution*: In an above-line treatment, the reserve for non-recurring capital expenditures would be taken out in the calculation of net operating income (i.e., above line). In a below-line treatment, the reserve for non-recurring capital expenditures would be subtracted from net operating income (i.e., below line).

1. Use the following property data:

Cash flow from operations:

Year 1 2 3 4 5

NOI $150,000 $150,000 $150,000 $150,000 $150,000

Debt Service $125,000 $125,000 $125,000 $125,000 $125,000

Cash Flow at sale:

Sale Price: $2,000,000

Cost of sale: $125,000

Mortgage balance: $1,500,000

1. Assuming the going-in capitalization rate is 8.00 percent, compute a value for the property using direct capitalization.

*Solution*: Value = NOI1/R = $150,000/0.08 = $1,875,000

1. Assuming the required yield/return on unlevered cash flows is 10 percent, and that the property will be held by a buyer for five years, compute the value of the property based on discounting unlevered cash flows.

*Solution:*

Sale Price: $2,000,000

Cost of sale/selling expenses: $125,000

Net sale proceeds $1,875,000



1. Assuming the relevant required yield/return on levered cash flows is 15 percent, and that the property will be held by a buyer for five years, what is the present value of the levered cash flows?

*Solution*:

Year 1 2 3 4 5

NOI $150,000 $150,000 $150,000 $150,000 $150,000

Debt Service $125,000 $125,000 $125,000 $125,000 $125,000

BTCF $25,000 $25,000 $25,000 $25,000 $25,000

Sale Price: $2,000,000

* Cost of sale/selling expenses: $125,000

Net sale proceeds $1,875,000

* Mortgage balance $1,500,000

Before-tax equity reversion $375,000



1. Given the following owner’s income and expense estimates for an apartment property, formulate a reconstructed operating statement. The building consists of 10 units that could rent for $550 per month each.

|  |  |  |
| --- | --- | --- |
| **Owner’s Annual Income Statement** | | |
| Rental income (last year) | $60,600 |  |
| Less: Operating & capital expenses |  |  |
| Power | $2,200 |  |
| Heat | 1,700 |  |
| Janitor | 4,600 |  |
| Water | 3,700 |  |
| Maintenance | 4,800 |  |
| Reserve for capital expenditures | 2,800 |  |
| Management | 3,000 |  |
| Tax depreciation | 5,000 |  |
| Mortgage payments | 6,300 |  |

Estimating vacancy and collection losses at 5 percent of potential gross income, reconstruct the operating statement to obtain an estimate of NOI. Assume an above-line treatment of CAPX. Remember, there may be items in the owner’s statement that should not be included in the reconstructed operating statement. Using the NOI and a Ro of 11.0 percent, calculate the property’s indicated market value. Round your answer to the nearest $1,000.

*Solution*:

|  |  |  |
| --- | --- | --- |
| Reconstructed Operating Statement | | |
| PGI: (10 units x $550 x 12) |  | $66,000 |
| Less: Vacancy Loss (at 5 percent) |  | (3,300) |
| EGI: |  | 62,700 |
| Less: Operating Expenses |  |  |
| Power | $2,200 |  |
| Heat | 1,700 |  |
| Janitor | 4,600 |  |
| Water | 3,700 |  |
| Maintenance | 4,800 |  |
| Management | 3,000 | 20,000 |
| Less: Reserve for CAPX |  | 2,800 |
| Net Operating Income |  | $39,900 |

Note: Mortgage payments and depreciation are not included in the calculation of the property’s NOI.

The indicated value of the property is $362,727 ($39,900 / 0.11), which rounds to $363,000.

1. You have been asked to estimate the market value of an apartment complex that is producing annual net operating income of $44,500. Four highly similar and competitive apartment properties within two blocks of the subject property have sold in the past three months. All four offer essentially the same amenities and services as the subject. All were open-market transactions with similar terms of sale. All were financed with 30-year fixed-rate mortgages using 70 percent debt and 30 percent equity. The sale prices and estimated first-year net operating incomes were as follows:

Comparable 1: Sale price $500,000; NOI $55,000

Comparable 2: Sale price $420,000; NOI $50,400

Comparable 3: Sale price $475,000; NOI $53,400

Comparable 4: Sale price $600,000; NOI $69,000

What is the indicated value of the subject property using direct capitalization?

*Solution*:

The abstracted going-in capitalization rates from the four properties are listed below:

Comparable 1: 0.110

Comparable 2: 0.120

Comparable 3: 0.112

Comparable 4: 0.115

Simple Ave. 0.114

The simple average of the four comparable cap rates is 0.114. Thus, the indicated value of the subject property is $390, 351, ($44,500 / 0.114), which rounds to $390,000.

1. You are estimating the value of a small office building. Suppose the estimated NOI for the first year of operations is $100,000.

a. If you expect that NOI will remain constant at $100,000 over the next 50 years and that the office building will have no value at the end of 50 years, what is the present value of the building assuming a 12.2% discount rate? If you pay this amount, what is the indicated initial cap rate?

*Solution*: The present value, using a financial calculator, is $817,078.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 50 | I = 12.2 | PV = ? | PMT = 100,000 | FV = 0 |

The initial (going-in) cap rate is $100,000/$817,078 = 12.24%

b. If you expect that NOI will remain constant at $100,000 forever, what is the value of the building assuming a 12.2% discount rate? If you pay this amount, what is the indicated initial cap rate?

*Solution*: The value of the building with NOI remaining constant at $100,000 is calculated using the formula for a perpetuity, which is $100,000/0.122, or $819,672. If you pay $819,672 for the property, the initial (going-in) cap rate is 12.2% ($100,000 / $819,672).

c. If you expect the initial $100,000 NOI will grow forever at a 3% annual rate, what is the value of the building assuming a 12.2% discount rate? If you pay this amount, what is the indicated initial cap rate?

*Solution*: The capitalization rate consists of a required IRR on equity and a growth rate. Applying the general constant-growth formula and assuming that the growth rate is 3%, the indicated capitalization rate is equal to 9.2% (12.2% - 3.0%.). Therefore, using a cap rate of 9.2%, the indicated value of the building is $100,000/0.092, or $1,086,957.

1. Describe the conditions under which the use of effective gross income multipliers to value the subject property is appropriate.

*Solution*: The use of gross income multipliers is predicated on two primary assumptions. First, it is assumed that the operating expense percentage of the subject property and the comparable properties are equal. Second, this approach assumes that the subject property and comparable properties are collecting market rents. In practice, gross income multipliers are most appropriate for valuing apartment buildings.

1. In what situations or for which types of properties might discounted cash flow analysis be preferred to direct capitalization?

*Solution*: Direct capitalization is dependent on information obtained from sales of properties that are deemed to be comparable to the subject property. Identifying comparable properties is particularly difficult with commercial real estate investments. Discounted cash flow analysis is useful for valuing income-producing properties because the unique expected cash flows for a particular property are evaluated using the appropriate required internal rate of return. DCF is especially useful when valuing multi-tenant office buildings and shopping centers were lease terms can vary widely across even otherwise similar properties.

1. What is the difference between a fee simple estate and a leased fee estate?

*Solution*: A fee simple estate is the highest form of property ownership. It is complete ownership of a property without regard to leases. A leased fee estate is ownership of a property subject to leases on the property. When acquiring existing commercial real estate, investors are most often acquiring a leased fee estate because they are acquiring the property subject to the existing leases.

1. What is the difference between contract rent and market rent? Why is this distinction more important for investors purchasing existing office buildings than for investors purchasing existing apartment complexes?

*Solution*: Contract rent refers to the actual rent paid under existing lease contracts executed between owners and tenants. Market rent refers to the potential rental income a property could receive on the open market as of the effective date of an appraisal. The distinction is particularly important for investors in office buildings because commercial leases tend to be for multiple years, unlike apartment leases. Existing leases at below market rates will be included in the calculation of potential gross income, which will depress the appraised value of the property relative to the appraised value assuming market rental rates.

1. Estimate the market value of the following small office building. The property has 10,500 square feet of leasable space that was leased to a single tenant on January 1, four years ago. Terms of the lease call for rent payments of $9,525 per month for the first five years, and rent payments of $11,325 per month for the next five years. The tenant must pay all operating expenses.

During the remaining term of the lease, there will be no vacancy and collection losses; however, upon termination of the lease it is expected that the property will be vacant for three months. When the property is released under short-term leases, with tenants paying all operating expenses, a vacancy and collection loss allowance of 8 percent per year is anticipated.

The current market rental for properties of this type under triple net leases is $11 per square foot, and this rate has been increasing at a rate of 3 percent per year. The market discount rate for similar properties is about 11 percent, the "going-in" cap rate is about 9 percent, and terminal cap rates are typically 1 percentage point above going-in cap rates.

Prepare a spreadsheet showing the rental income, expense reimbursements, *NOI*s, and the net proceeds from the sale of the property at the end of an 8-year holding period. Then use the information provided to estimate the market value of the property.

*Solution*: The fifth year of the 10-year lease is the first year of analysis. The problem calls for an 8-year analysis--one for the last year of the 1st 5-year period, five for the second 5-year period, one to allow the vacancy and collection loss to achieve a normal level, and one at the normal level for calculating the property's value (sale price) at that time. Assume vacancy and collections losses in year 7 are 25 percent, which reflects 100 percent vacancy for three months and no vacancy for 9 months. Assume the “normal” vacancy rate of 8 percent will apply in year 8 of the analysis and beyond.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Yr. 1 | Yr. 2 | Yr. 3 | Yr. 4 | Yr. 5 | Yr. 6 | Yr. 7 | Yr. 8 | Yr. 9 |
| Contract Rent | 114,300 | 135,900 | 135,900 | 135,900 | 135,900 | 135,900 |  |  |  |
| Market Rent | 115,500 | 118,965 | 122,534 | 126,210 | 129,996 | 133,896 | 137,913 | 142,050 | 146,311 |
| Less: VC | 0 | 0 | 0 | 0 | 0 | 0 | 34,478 | 11,364 | 11,705 |
| Effective Gross Inc. | 114,300 | 135,900 | 135,900 | 135,900 | 135,900 | 135,900 | 103,435 | 130,686 | 134,606 |
| Less: Operating Exps | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Operating Inc. | 114,300 | 135,900 | 135,900 | 135,900 | 135,900 | 135,900 | 103,435 | 130,686 | 134,606 |

Sale price at the end of Yr. 8: = [NOI (yr9) / Terminal cap rate]

= $134,606 / 0.10

= $1,346,060

Cash Flows: CF1 = 114,300

CF2 = 135,900

CF3 = 135,900

CF4 = 135,900

CF5 = 135,900

CF6 = 135,900

CF7 = 103,435

CF8 = 1,476,746 (130,686+1,346,060)

PV of Cash Flows @ 11 percent = $1,246,090