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

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

3. The actions of local, state, and federal governments affect real estate values
   d. All of the above

4. Approximately what portion of U.S. households own their own home?
   b. Approximately two-thirds

5. Of the following asset categories, which class has the greatest aggregate market value?
   d. Real estate

6. Storm water drainage systems are best described as:
   b. Improvements to the land

7. What is the single largest asset category, in terms of value, in the portfolio of the typical U.S. household?
   a. Real estate

8. Real estate markets differ from other asset classes by having all of the following characteristics except:
   d. Homogeneous product

9. Which of the following is not important to the location of commercial properties?
   c. Access to schools

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.

2. 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 21 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.

3. 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 September 2005, real estate (including owner-occupied housing, but excluding real estate held by non-real estate corporations) was the single largest asset class in the U.S., valued at approximately $23.4 trillion. Publicly traded corporate equities equated to about $17.2 trillion of the U.S. market. The value of mortgage debt is approximately $11.1 trillion. This is larger than the existing stock of both corporate and foreign bonds and the outstanding value of U.S. Treasury Securities.

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

Solution: Real estate is the single largest asset in the typical U.S. household’s portfolio, representing approximately 30 percent of household wealth in September of 2005. In comparison, the total value of corporate stocks and mutual fund shares represents 16 percent of household assets. Pension reserves, excluding stocks, represent 17 percent of household assets. Deposits and money market funds represent 9 percent of household assets.

5. 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 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.

6. 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.

7. 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.

8. Real estate construction is a volatile process determined by the interaction of the user and capital markets. What signals do real estate producers 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, 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 2
VALUE AND REAL ESTATE DECISIONS

Test Problems

1. Which of these is the best example of an investment decision, based on the criteria identified in the chapter?
   c. Decision whether or not to purchase a high definition television or stay with a conventional TV at $500 lower cost.

2. A portfolio perspective of real estate value, as described in this chapter, involves considering the value of real estate in relation to:
   c. Your own particular context and your other assets.

3. The effect of selecting a residence upon such matters as lifestyle and relations with others outside the household are described as:
   c. Nonmonetary costs or benefits.

4. Of these real estate investments, the riskiest is
   e. Raw land.

5. Of these real estate investments, the one with the greatest cost uncertainty is a:
   c. Subdivision development with permits not yet granted.

6. As the level of perceived risk increases,
   d. Values decrease and expected returns increase.

7. The most liquid form of real estate is:
   d. Standard single-family residences.

8. The type of real estate that tends to have the highest cash flow uncertainty is:
   e. Hotels and motels.

9. Which of these strategies in real estate investment would tend to increase risk?
   d. Invest for a short term (short holding period).

10. Which of these is the correct statement about the relationship of investment analysis and appraisal?
    a. Investment analysis estimates value to a specific investor while appraisal estimates value to the typical investor.
Study Questions

1. Buying a home is not about return on investment. It is about family or household security, opportunity, and other irreplaceable intangibles. As a person who understands the meaning of investment, how would you answer this assertion?

Solution: The purchase of a home is an investment because the decision process requires the evaluation of nonmonetary costs and benefits. Homeowners assess the value of future benefits of residing in a particular neighborhood against expected costs. Furthermore, the purchase of a home is an investment because it involves significant upfront costs for a future benefit that may last for a significant period. Additionally, the purchase of a home, like other investments, may require substantial time and cost to undo.

2. Many banks pitch home equity loans as a way to finance a vacation. Is using the equity in one’s house to finance a vacation a good investment decision? Why or why not?

Solution: The use of a home equity loan to finance a vacation may not be a sound investment decision unless the vacation has lasting consequences. The enjoyment gained from a vacation may be short-lived while the corresponding costs may last for years.

3. It is common for parents to purchase a residence for their child to live in while going to college, often reasoning that apartment rent is a complete waste when the money could be used to build up owner equity. What are the arguments for such an investment? Against it?

Solution: If the parent believes the benefits gained from the property exceed the initial costs, then the decision to purchase a residence may be a viable option. However, purchasing a residence during the child’s time in college is risky because of the property’s relatively short holding period, which amplifies the uncertainty of the cash flows received upon disposition of the property. The purchase of a home also entails substantial upfront costs beyond the purchase price that must be considered. Additionally, the parent faces the risk of paying the monthly costs for this residence for an extended period if the property is not promptly sold after the child graduates.

On the other hand, renting an apartment accumulates no equity and, thus, no wealth while the student attends school. Additionally, if the student is in school for four years or more, the holding period of the asset may not be considered “short” and it may be logical to purchase a house. The cost of renting an apartment versus the total costs and future cash flows of purchasing a home must be compared to determine which decision is best. If this analysis concludes that
purchasing a home provides a higher net cash flow, sufficient to offset the opportunity cost of no being able to use the money elsewhere, then the parent should buy the home for the child.

4. Raw land at the edge of urban development that lacks the necessary permits for development is, in general, the most risky kind 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.

5. An appraisal of a property estimates the value to a typical investor, that is, the probable selling price. Why might this be a misleading indicator to a specific investor for the investment value?

Solution: An appraisal does not consider an individual investor’s perspective and expectations. There may be reasons why the property in question has greater or lesser value to a particular individual that to the typical buyer. Consequently, an individual’s investment value may differ from the value placed on a property by the market, or typical investor.

6. 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 estimate? Are there any risks or other considerations that should be examined?

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.
CHAPTER 3
Legal Foundations to Value

Test Problems

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

2. Which of these easements is most likely to be an easement in gross?
   d. Power line easement

3. Rules used by courts to determine whether something is a fixture include all except:
   c. Law of capture.

4. Which of the following is a titled estate?
   e. All of these.

5. 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

6. 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

7. Which of these liens has the highest priority?
   c. Property tax lien

8. Restrictive covenants for a subdivision usually can be enforced by:
   d. $a$ and $b$, but not $c$

9. Timeshare programs can involve which of the following claims or interests?
   e. All of these are possible

10. 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 of rights resulting from 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.

2. 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.
3. 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.

4. 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 to merely “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.

5. 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.

6. 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.

7. 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 4
Conveying Real Property Interests

Test Questions

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

2. The interest being conveyed by a deed is specified in the:
   b. Habendum clause

3. The “highest quality” form of deed is the:
   a. General warrantee deed.

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

5. 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.

6. 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

7. 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.

8. Which of these is a widely used form of “evidence of title
   b. Title insurance commitment.

9. The most common form of legal description for urban residential property is the:
   c. Plat lot and block number.

10. 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.

2. 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.

3. 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 ago). 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.

4. 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.

5. 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.

6. 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.

7. 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 5
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.

2. A comprehensive plan usually deals with which of the following elements?
   e. All of the above.

3. Property taxes are the principal source of revenue for:
   e. Both local governments and school districts.

4. The authority for approving site plans for large projects ultimately rests with the:
   a. City council or commission. (This is the elected governing body.)

5. The most accurate conclusion about the regressivity of the property tax is that it is:
   d. Regressive, but when benefits are considered, the net result is not regressive.

6. Traditional land use controls (pre-1970) include:
   e. All three: a, b, and c.

7. Radon gas is:
   a. A naturally occurring result of geologic activity.

8. “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 housing should be built close to the street.

9. Elements of traditional zoning include all except:
   a. Performance Standards.

10. 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 would 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 will be tarnished in the future, even if the hazardous materials were cleaned up.

2. 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 $120,000 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 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.

3. 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.

4. 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 encourages standardization and minimum requirements that serve to protect property values. 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.

5. 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: Although the law currently states that a property owner is responsible for any hazardous material on the site, there are many reasons for arguing that the contaminator should be responsible for the cleanup. Under the current law, innocent parties are 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.

6. 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.
   a. Do you agree or disagree?
   b. 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.

7. 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:**

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<tr>
<td>County</td>
<td>5.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>23.0</td>
</tr>
</tbody>
</table>
Chapter 6
Market Determinants of Value

Test Problems

1. The “gravity” that draws economic activity into clusters is:
   c. Demand for access or proximity.

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

3. Cities have tended to grow where:
   a. Transportation modes intersect or change.

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

5. The best example of a base economic activity would be a:
   e. Regional sales office.

6. Important supply factors affecting a city’s growth or growth potential include all except the:
   a. Unemployment rate.

7. Which of these are true about agglomeration economies?
   e. All of the above.

8. Which of these influences will decrease the level of a bid-rent curve at the center of the city?
   a. Faster travel time.

9. 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.

10. 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.
2. 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 following: On the U.S. Census home page, www.census.gov. Look in the right-hand column to find State & County QuickFacts, and select your state and county. At the top of the large table of current information that appears click on “Browse more datasets ….” Then look down the page for the heading “Historical Population Counts”)

Solution: The solution to this question is MSA specific.

3. On the U.S. Census web site, use the approach shown in the chapter in Explore the Web to access the SF3 detailed census tables for 2000. 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: visibility, 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:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Total Employment</th>
<th>Basic Employment</th>
<th>Nonbasic Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>50,000</td>
<td>25,000</td>
<td>6,250</td>
<td>18,750</td>
</tr>
<tr>
<td>2001</td>
<td>53,000</td>
<td>26,500</td>
<td>6,625</td>
<td>19,875</td>
</tr>
<tr>
<td>2002</td>
<td>57,000</td>
<td>28,500</td>
<td>7,125</td>
<td>21,375</td>
</tr>
<tr>
<td>2003</td>
<td>65,000</td>
<td>32,500</td>
<td>8,125</td>
<td>24,375</td>
</tr>
<tr>
<td>2004</td>
<td>70,000</td>
<td>35,000</td>
<td>8,750</td>
<td>26,250</td>
</tr>
<tr>
<td>2005</td>
<td>?</td>
<td>?</td>
<td>9,000*</td>
<td>?</td>
</tr>
</tbody>
</table>

*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 2005 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 7
Forecasting Ownership Benefit and Value: Market Research

Test Problems

1. Factors that affect housing market segmentation include all except:
   d. Household unemployment status.

2. The process of creating a “market-defining story” includes all of these questions except:
   d. What is the price?

3. The cycle of real estate market research starts with:
   a. Creating a market defining story.

4. Features of an office building that may be important to one market segment or another include:
   e. All of the above.

5. 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.

6. The approach to real estate market research advocated in this chapter starts with the:
   e. The nature of the property.

7. A powerful tool for managing, manipulating, and displaying location-specific data is:
   d. Geographic information systems.

8. An extremely sophisticated, data intensive, and statistically intensive method of examining market segmentation is known as:
   d. Psychographics research.

9. Causes of real estate cycles include:
   d. Both a and b, but not c.

10. 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 SF3 detailed census tables for 2000. 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

![Owner Occupied Housing Values](image)

2. 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.

3. 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.

4. 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.

5. 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 8
Valuation Using the Sale 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.

2. The final price from each appraisal approach is termed the:
   d. Indicated Value.

3. The final price after reconciliation of the answers obtained from two or more approaches is termed the:
   a. Final Estimate of Value.

4. A new house in good condition that has a poor floor plan would suffer from which type of accrued depreciation?
   d. Incurable functional obsolescence

5. 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, which type of adjustment is made?
   b. Market conditions.

6. In appraising a single-family home, you find a comparable property very similar to the subject property. One important difference, however, concerns the financing. The comparable property sold one month ago for $120,000 and was financed with an 80 percent, 30-year mortgage at 5.0 percent interest. Current market financing terms are 80 percent, 30-year mortgage at 7 percent interest. The monthly payments on the market financing would be $638.69, while the monthly payments on the special 5.0 percent financing are $515.35. Assume the borrower's opportunity cost rate is 7 percent. The approximate present value of the present savings on the non-market financing is _____, and this amount should be ______ to the transaction price of the comparable.

   The present value of the payment savings is $18,538.94.

   \[
   \begin{array}{c|c|c|c|c}
   N=360 & I/YR=7/12 & PV=0 & PMT=123.34 & FV=0 \\
   \end{array}
   \]

   This $18,538.94 should be subtracted from the sale price of the comparable property.
   d. $18,539, subtracted.
7. 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. What is the average monthly compound rate of change in sale prices?
   a. 0.42%

8. A comparable property sold 10 months ago for $100,000. This sale price is adjusted to a normal sale price of $98,500. If the appropriate adjustment for market conditions is 0.30% per month, what would be the market-adjusted normal sale price of the comparable property?
   b. $101,495

9. 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
   Legal characteristics: 0
   Use: 0
   Nonrealty items: -$3,000

   What is the comparable’s final adjusted sale price?
   a. $160,732

   Transaction price   $150,000
   Financing terms Minus $2,600
   Normal sale price $147,400
   Market conditions Plus 8% $11,792
   Mkt-adj normal sale price $159,192
   Location Minus 5% $7,960 $151,232
   Physical characteristics Plus $12,500 $163,732
   Nonrealty minus $3,000 $160,732

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. Of the two methods available for estimating cost, appraisers normally use the reproduction cost of a building for appraisal purposes. A 30-year old building likely possesses many characteristics that render it obsolete. Therefore, calculating an accurate reproduction cost for an older building is difficult because outdated features, such as room arrangement, decorative features, and materials, are included in the reproduction costs. Estimating these costs can be problematic because reproducing the cost of a 30-year old building requires significant effort and assumptions of accrued depreciation.

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. The estimated value calculated using reproduction cost of the property is likely significantly different from the value obtained from the sales comparison approach and the income approach.

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, customer 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 the project.

6. Reproduction cost has 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:

Reproduction cost 350,000
Less: Depreciation (75,000) [350,000 x 15/70]
Depreciable Cost of Building Improvements 275,000
Add: Estimated Value of Site 55,000
Indicated Value by the Cost Approach 330,000

7. What is an appraisal report?

Solution: An appraisal report is the document prepared by the appraiser. This report contains the appraiser’s final estimate of value, the data forming the foundation of this estimate, and the calculations supporting the estimate.
CHAPTER 9
Valuation Using the Income Approach

Test Problems

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

2. An overall capitalization rate ($R_o$) is divided into which type of income or cash flow to obtain an indicated value?
   a. Net operating income (NOI).

3. Which of the following types of properties probably would not be appropriate for income capitalization?
   e. Public school.

4. Reserves for replacement and other nonrecurring expenses are allowances that reflect:
   d. The annual depreciation of the short-lived components of the building and expenses that occur only occasionally.

5. An appraiser estimates that a property will produce NOI of $25,000, the $Y_o$ is 11 percent, and the growth rate is 2.0 percent. What is the total property value (unrounded)?
   a. $277,778.

6. If a comparable property sells for $1,200,000 and the effective gross income of the property is $12,000 per month, the gross income multiplier is
   b. 8.33

7. The final value estimate produced by one approach is called
   a. Indicated Value.

8. The methodology of appraisal differs from that of investment analysis primarily regarding
   e. Point of view and types of data used.

Study Questions

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

<table>
<thead>
<tr>
<th>Property</th>
<th>NOI</th>
<th>Sale Price</th>
<th>Overall Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$57,800</td>
<td>$566,600</td>
<td>0.1020</td>
</tr>
<tr>
<td>B</td>
<td>49,200</td>
<td>496,900</td>
<td>0.0990</td>
</tr>
<tr>
<td>C</td>
<td>63,000</td>
<td>630,000</td>
<td>0.1000</td>
</tr>
<tr>
<td>D</td>
<td>56,000</td>
<td>538,500</td>
<td>0.1040</td>
</tr>
<tr>
<td>E</td>
<td>58,500</td>
<td>600,000</td>
<td>0.0975</td>
</tr>
</tbody>
</table>
What is the indicated overall rate \( (R_O) \)?

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

2. 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.

3. The cap rate on mortgage financing is 7.5 percent for properties similar to the subject. The typical loan-to-value ratio is 75 percent of value. What would be the indicated RO by simple equity analysis, if equity dividend rates \( (R_E) \) are running at about 11 percent?

**Solution:** The appropriate going-in cap rate, or \( R_O \), is simply a weighted average of the equity dividend rate and the mortgage capitalization rate. Therefore, \( R_O \) is \( 0.75(.075) + 0.25(.11) \), or 8.38%.

4. You are asked to appraise a vacant parcel of land. Your analysis shows that if apartments were constructed, the portion of the NOI attributable to the land would be $30,000 per year. If offices were constructed, the portion attributable to land would be $25,000, and the portion contributed by a small neighborhood shopping center would be $27,500. All of these uses would be legal. If the appropriate \( R_L \) is 0.105 (10.5%), what is the value of the site?

**Solution:** Using the land income that provides the highest and best use, \( \text{Land Value} = \frac{\text{Land Income}}{\text{Land Cap Rate}} \ (R_L) \)

\[
\begin{align*}
&= \frac{30,000}{0.105} \\
&= 285,714.29, \text{ or rounded } 285,700 
\end{align*}
\]

5. 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 Income Statement

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rental income (last year)</td>
<td>$60,600</td>
</tr>
<tr>
<td>Less: Expenses</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>$2,200</td>
</tr>
<tr>
<td>Heat</td>
<td>1,700</td>
</tr>
<tr>
<td>Janitor</td>
<td>4,600</td>
</tr>
<tr>
<td>Water</td>
<td>3,700</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4,800</td>
</tr>
<tr>
<td>Reserves</td>
<td>2,800</td>
</tr>
<tr>
<td>Management</td>
<td>3,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>5,000</td>
</tr>
<tr>
<td>Mortgage payments</td>
<td>6,300</td>
</tr>
<tr>
<td>Net income</td>
<td>$26,500</td>
</tr>
</tbody>
</table>

Estimating vacancy and collection losses at 5 percent of potential gross income, reconstruct the operating statement to obtain an estimate of NOI. 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 $500.

**Solution:**

**Reconstructed Operating Statement**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGI: (10 units x $550 x 12)</td>
<td>$66,000</td>
</tr>
<tr>
<td>Less: Vacancy Loss (at 5 percent)</td>
<td>(3,300)</td>
</tr>
<tr>
<td>EGI:</td>
<td>62,700</td>
</tr>
<tr>
<td>Less: Operating Expenses</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>$2,200</td>
</tr>
<tr>
<td>Heat</td>
<td>1,700</td>
</tr>
<tr>
<td>Janitor</td>
<td>4,600</td>
</tr>
<tr>
<td>Water</td>
<td>3,700</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4,800</td>
</tr>
<tr>
<td>Reserves</td>
<td>2,800</td>
</tr>
<tr>
<td>Management</td>
<td>3,000</td>
</tr>
<tr>
<td>Net Operating Income</td>
<td>$39,900</td>
</tr>
</tbody>
</table>

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.

6. 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 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.

7. 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.

\[
\begin{array}{|c|c|c|c|}
\hline
N & I & PV & PMT \\
\hline
50 & 12.2 & ? & 100,000 \\
\hline
\end{array}
\]

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.

8. Describe the conditions under which the use of 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.

9. 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.

10. Distinguish between levered and unlevered cash flows. In what sense does the equity investor have a residual claim on the property’s cash flow stream if mortgage financing is employed?

Solution: The use of mortgage debt to finance the acquisition of a real estate investment property is referred to as leverage. Levered cash flows measure a property’s income stream after deducting debt service payments. The amount of cash flow available for distribution to an equity investor is reduced by the amount paid to
the lender. Therefore, the equity investor has a residual claim, known as the before-tax cash flow, which is simply NOI less debt service.

11. 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.

12. 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.

13. 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.

<table>
<thead>
<tr>
<th>Yr. 1</th>
<th>Yr. 2</th>
<th>Yr. 3</th>
<th>Yr. 4</th>
<th>Yr. 5</th>
<th>Yr. 6</th>
<th>Yr. 7</th>
<th>Yr. 8</th>
<th>Yr. 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Rent</td>
<td>114,300</td>
<td>135,900</td>
<td>135,900</td>
<td>135,900</td>
<td>135,900</td>
<td>135,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Rent</td>
<td>115,500</td>
<td>118,965</td>
<td>122,534</td>
<td>126,210</td>
<td>129,996</td>
<td>133,896</td>
<td>137,913</td>
<td>142,050</td>
</tr>
<tr>
<td>Less: VC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>34,478</td>
<td>11,364</td>
</tr>
<tr>
<td>Less: Operating Exps</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Sale price at the end of Yr. 8: \[ \text{NOI (yr9) / Terminal cap rate} \]
\[ = \frac{134,606}{0.10} \]
\[ = 1,346,060 \]

Cash Flows: \[ \text{CF}_1 = 114,300 \]
\[ \text{CF}_2 = 135,900 \]
\[ \text{CF}_3 = 135,900 \]
\[ \text{CF}_4 = 135,900 \]
\[ \text{CF}_5 = 135,900 \]
\[ \text{CF}_6 = 135,900 \]
\[ \text{CF}_7 = 103,435 \]
\[ \text{CF}_8 = 1,476,746 (130,686+1,346,060) \]

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

1. The element of an adjustable interest rate that is the “moving part” is the:
   a. Index

2. Which of these aspects of a mortgage loan will be addressed in the note rather than in the mortgage?
   a. Prepayment penalty

3. A lender may reserve the right to require prepayment of a loan at any time they see fit through a(n):
   b. Demand clause

4. When a buyer of a property with an existing mortgage loan acquires the property without signing the note for an existing loan the buyer is acquiring the property:
   c. Subject to the mortgage

5. Which of these points in a mortgage loan would be addressed in the mortgage (possibly in the note as well)?
   d. Escrows

6. To finance property where either the borrower, the property, or both fail to qualify for the standard mortgage financing, a common nonmortgage solution is through the:
   d. Contract for deed.

7. Ways that a lender may respond to a defaulted loan without resorting to foreclosure include all of the following except:
   d. Accelerate the debt.

8. If the lender in a standard first mortgage wishes to foreclose cost effectively, it is crucial to have which clause in the mortgage:
   a. Acceleration clause

9. A common risk that frequently interferes with a lender’s efforts to work out a defaulted loan through either nonforeclosure means or foreclosure is:
   d. Bankruptcy.

10. The characteristics of a borrower than can be considered by a lender in a mortgage loan appreciation are limited by the:
11. The Real Estate Settlement Procedures Act does which of these:
   e. All of the above.

12. Foreclosure tends to be quickest in states that:
   d. Have power of sale.

13. From a home mortgage lender’s perspective, which statement is true about the
effect of bankruptcy upon foreclosure?
   a. Chapter 7 bankruptcy is the most “lender friendly” form.

14. The most internationally oriented index rate for adjustable rate mortgages is:
   c. A LIBOR rate.

15. A type of loan that has grown in volume in recent years which has raised concerns
about predatory lending practices is the:
   d. Sub-prime mortgage

16. A partially amortizing loan always will have
   c. A balloon payment.

17. Which of these statements is true about mortgage loans for income producing real
estate?
   e. All of the above.

18. With what type of loan security arrangement is the deed held by a neutral party
   and returned upon payment of the mortgage in full?
   c. Deed of trust.

19. The Truth in Lending Act gives a home mortgage borrower how long to rescind a
mortgage loan?
   c. Three days.

20. Which statement is correct about the right of prepayment of a home mortgage
   loan?
   b. Most home mortgage loans have the right of prepayment without charge, but
not all, and the borrower should check the loan carefully.

**Study Questions**

1. Mortgage law is as clear, consistent, and enforceable in the United States as in
   any place in the world, and far more so than in many countries. Why is this a vital
   element of an efficient real estate finance system?

   *Solution:* Clear, consistent, and enforceable mortgage law is critical to the real
   estate finance system for many reasons. Since debt financing is used in most real
   estate transactions, eliminating uncertainty is crucial for both parties in the
transaction. Certainty reduces the cost of borrowing. The lender can be more certain of the rights and risks involved, which reduces the necessary risk premium required in the interest rate. The borrower benefits from the same certainty both due to a lower interest rate, and due to the greater predictability of outcome. For example, the borrower can understand, in case of delinquent payments, how much risk actually is involved. For most individuals, a debt-financed home purchase will be the largest financial transaction that they will undertake. The lender is more informed than is the borrower in mortgage transactions. Therefore, it is necessary to establish clear laws to protect consumers and place them on equal footing. Mortgage financing is also a complicated process and requires unambiguous mortgage law to anticipate all possible issues that may arise. Standardized mortgage law is also important to financial markets, as mortgage markets have become national because this enhances trading liquidly and has served to reduce the cost of borrowing to potential homeowners.

2. The Congress has adopted changes in bankruptcy law that would make Chapter 7 bankruptcy more difficult for households, requiring greater use of Chapter 13, thus providing greater protection to unsecured credit card companies. As a mortgage lender, do you care about this? If so, what would be your position?

Solution: The mortgage lender is entitled to the value of the mortgage indebtedness under both Chapter 7 and Chapter 13 because their claim has priority. However, Chapter 13 is essentially a debt workout plan that will most likely delay the efforts by a lender to foreclose on the property. Delays may cost the lender opportunity costs through uncollected interest and legal expenses. Additionally, the value of the property may deteriorate due to neglect during this process.

3. Residential mortgage terms (mortgage notes) have become increasingly uniform as the mortgage market has become more national and efficient. Is there any downside to this for the homeowner?

Solution: The increased uniformity of mortgage terms reduces the opportunity for customization of terms based on a homeowner’s unique situation and characteristics. However, the standardization of the mortgage process has allowed the borrower to reap the benefits of reduced costs associated with the lending process. Furthermore, the standardization of the mortgage process has been accompanied by the introduction of more laws to protect consumers’ rights.

4. Most lenders making adjustable rate mortgage loans offer a “teaser rate.” Is this a good policy or is it misrepresentation?

Solution: The primary concerns with “teaser rates” is that the terms of the mortgage be transparent, and that they clearly address the interaction of periodic caps with the “teaser rate.” The reduction from a teaser rate may be a percentage point or two below the sum of index plus margin, but this usually applies for a
short time, perhaps one year. The consumer must be aware of the mechanics of the adjustable feature of the loan.

5. Home mortgage lending is heavily regulated by federal laws. Is this a result of Congressional pandering to consumer groups, or are there good reasons why home mortgage lending should be regulated more than, say, automobile financing?

Solution: The purchase of a home is typically the largest financial transaction undertaken by most individuals. Unlike a car, the purchase of a home typically cannot be readily undone by quickly selling the property to another party. Mortgage financing is normally more complex than automobile financing. Mortgage financing requires some basic understanding of law, and, without consumer protection laws, the lender has a disproportionate advantage over the borrower in this transaction. From a public policy perspective, federal regulation prohibits discrimination and financially abusive practices.

6. For your own state, determine whether:

   a. It is a judicial or non-judicial foreclosure state.
   b. The standard home loan is based on a deed of trust or a mortgage.
   c. There is a statutory right of redemption, and, if so, how long.
   d. Deficiency judgments are allowed against defaulted homeowners.

Based on this information can you judge your state is relatively debtor friendly or borrower friendly?

Solution: For the student to decide as answers to the above questions vary by state.

7. Download one mortgage and one deed of trust from the Freddie Mac website. Compare them to see what differences you can find in their clauses

Solution: Differences between a mortgage and a deed of trust include the following:

- A deed of trust is not a mortgage contract; it is a special kind of deed that is recorded in public records.
- The trustee holds your title in trust until the debt is paid but cannot take your property for any reason.
- The deed of trust is cancelled when the debt is paid.

The primary differences between a mortgage and a deed of trust occur if the home is foreclosed. The trustee has power of sale. Therefore, if your loan becomes delinquent, the lender will give the trustee proof of the delinquency and ask the trustee to initiate foreclosure proceedings.
CHAPTER 11
Residential Mortgage Types and Borrower Decisions

Test Problems

1. Private mortgage insurance (PMI) is usually required on _____ loans with loan-to-value ratios greater than _____ percent.
   d. Home, 80 percent.

2. The dominant loan type originated and kept by most depository institutions is the:
   a. Fixed-payment, fully amortizing mortgage. (Note, while this answer has traditionally been correct, the sharp increase in adjustable rate loans since about 2004, could alter the correct answer to b. Adjustable rate mortgage.)

3. Which of the following mortgage types has the most default risk, assuming the initial loan-to-value ratio, contract interest rate, and all other loan terms are identical?
   a. Interest only loans.

4. A mortgage that is intended to enable older households to “liquify” the equity in their home is the:
   d. Reverse annuity mortgage.

5. A jumbo loan is:
   b. A conventional loan that is too large to be purchased by Fannie Mae or Freddie Mac.

6. The maximum loan-to-value ratio for an FHA loan over $50,000 is approximately:
   b. 98 percent.

7. The maximum loan-to-value ratio on a VA guaranteed loan is:
   d. 100 percent.

8. Conforming conventional loans are loans that are:
   c. Are eligible for purchase by Fannie Mae and Freddie Mac.

9. Home equity loans typically:
   d. Have tax-deductible interest charges.

10. The best method of determining whether to refinance is to use:
    a. Net benefit analysis.

11. Probably the greatest contribution of FHA to home mortgage lending was to:
    a. Establish the use of the level-payment home mortgage.
Study Questions

1. On an adjustable mortgage, do borrowers always prefer smaller (i.e. tighter) rate caps that limit the amount the contract interest rate can increase in any given year or over the life of the loan? Explain why or why not.

   Solution: Borrowers preferences are influenced by their expectations of future interest rates. For example, borrowers may prefer larger caps if they believe interest rates will not increase substantially. In this scenario, the loan interest rate will be lower because the borrower, not the lender, bears the risk of interest rates increasing.

2. Explain the potential tax advantages associated with home equity loans:

   Solution: Unlike interest on consumer debt, interest paid on the first $100,000 of a home equity loan is fully deductible for federal and, in some cases, state income tax purposes. By including the interest paid on a home equity loan as an itemized deduction, taxpayers can effectively reduce the cost of this loan on an after-tax basis.

3. Distinguish between conforming and nonconforming residential mortgage loans and explain the importance of the difference.

   Solution: Conforming residential loans meet the standards required for purchase in the secondary market by Fannie Mae or Freddie Mac. Conforming loans have significantly greater liquidity in the secondary market, and consequently require a lower interest rate.

4. Discuss the role and importance of private mortgage insurance in the residential mortgage market.

   Solution: Private mortgage insurance protects a lender against losses due to default. Private mortgage insurance companies provide such insurance, which usually covers the top 20 percent of loans. In other words, if a borrower defaults and the property is foreclosed and sold for less than the amount of the loan, the PMI will reimburse the lender for a loss up to 20 percent of the loan amount. The net effect of the private mortgage insurance is to reduce default risk for lenders, which allows lenders to make loans to a larger pool of borrowers who are unable to place a 20% downpayment towards the purchase of a home.

5. Explain the maturity imbalance problem faced by savings and loan associations that hold fixed-payment mortgages as assets.
Solution: Savings and loan associations historically have used short-term savings deposits to fund long-term, fixed rate home loans. This mismatch in the maturity of assets and liabilities exposes them to severe interest rate risk. Consequently, the cost of funds from interest paid on short-term savings deposits may rise faster than the yield on their investments, or issued loans. A benefit of adjustable rate mortgages is that they closely track an institution’s cost of funds.

6. Suppose a homeowner has an existing mortgage loan with these terms: Remaining balance of $50,000, interest rate of 8%, and remaining term of 10 years (monthly payments). This loan can be replaced by a loan at an interest rate of 6 percent, at a cost of 8% of the outstanding loan amount. Should the homeowner refinance? What difference would it make if the homeowner expects to be in the home for only five more years?

Solution a, using net benefit analysis: The payment on the existing loan is $606.54 while the payment on a new loan would be $555.10. Thus, the new loan results in a monthly savings of $51.54. Over the expected holding period of five years the monthly savings sum to $3,092.12 (60 x $51.54). The cost of refinancing is 8 percent of the amount refinanced, or $4,000 (.08 x 50,000). Thus the net benefit of refinancing is negative $907.87 (3,092.12 – 4,000).

Solution b, using net present value (see online chapter appendix): The present value of the existing loan, with monthly payments of $606.64 discounted at 6%, is $54,641.98. The cost of refinancing is $4,000, which results in a NPV of $641.98 assuming the loan is held to maturity. If the loan is to be paid off anyway in five years, the benefit of refinancing is only $3,559.38 (n=60, I=.50, Pmt = 606.64, FV=29,918.43). Thus, NPV is negative ($3,559.38 - $4,000 = -440.62) if the homeowner expects to be in the home for only five more years.

7. Assume an elderly couple owns a $140,000 home that is free and clear of mortgage debt. A reverse annuity mortgage (RAM) lender has agreed to a $100,000 RAM. The loan term is 12 years, the contract is 9.25%, and payments will be made at the end of each month.
   a. What is the monthly payment on this RAM?
   b. Fill in the following partial loan amortization table:

<table>
<thead>
<tr>
<th>Month</th>
<th>Beginning Balance</th>
<th>Monthly Payment</th>
<th>Interest</th>
<th>Ending Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>5</td>
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</tbody>
</table>

c. What will be the loan balance at the end of the 12-year term?

d. What portion of the loan balance at the end of year 12 represents principal? What portion represents interest?
Solution:

a. The monthly payment on the RAM is $381.32 (n=144, I=9.25, PV=0, FV=$100,000.)
b. The amortization is as follows:

<table>
<thead>
<tr>
<th>Month</th>
<th>Beginning Balance</th>
<th>Monthly Payment</th>
<th>Interest</th>
<th>Ending Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>381.32</td>
<td>0</td>
<td>381.32</td>
</tr>
<tr>
<td>2</td>
<td>381.32</td>
<td>381.32</td>
<td>2.94</td>
<td>765.58</td>
</tr>
<tr>
<td>3</td>
<td>765.58</td>
<td>381.32</td>
<td>5.90</td>
<td>1,152.80</td>
</tr>
<tr>
<td>4</td>
<td>1,152.80</td>
<td>381.32</td>
<td>8.89</td>
<td>1,543.01</td>
</tr>
<tr>
<td>5</td>
<td>1,543.01</td>
<td>381.32</td>
<td>11.89</td>
<td>1,936.22</td>
</tr>
</tbody>
</table>

c. The balance at the end of 12 years is $100,000.
d. Principal is 144 x 381.32, or $54,910. Interest is $45,090, or $100,000 - $54,910.

8. Five years ago you borrowed $100,000 to finance the purchase of a $120,000 house. The interest rate on the old mortgage is 10%. Payment terms are being made monthly to amortize the loan over 30 years. You have found another lender who will refinance the current outstanding loan balance at 8% with monthly payments for 30 years. The new lender will charge two discount points on the loan. Other refinancing costs will equal $3,000. There are no prepayment penalties associated with either loan. You feel the appropriate opportunity cost to apply to this refinancing decision is 8%.

a. What is the payment on the old loan?
b. What is the current loan balance on the old loan (five years after origination)?
c. What should be the monthly payment on the new loan?
d. Should you refinance today if the new loan is expected to be outstanding for five years?

Solution:

a. The payment on the old loan is $877.57.
b. The current balance is $96,574.32.
c. The payment on the new loan is $708.63.
d. If the new loan is to be paid off in five years, the balance of the original loan after year ten is $90,938.02, calculated with the following inputs: (N = 240, I = 0.8333, PMT = 877.57, and FV = 0.)
Answer based on net benefit analysis:
The savings in monthly payment by going to the new loan is $168.94 (877.57 – 708.63). This results in an accumulated savings of $10,136.40 (60 x 168.94) over the assumed holding period of five years. The cost of refinancing is $3,000 plus two percent of the balance, or $1,931.49 (.02 x 96,574.32), for a sum of $4,931.49. Thus, the net benefit is $5,204.91 (10,136.40 – 4,931.49), and refinancing is financially beneficial.

Answer based on net present value:
The present value of the old loan, paid off 5 years from today is 104,318.93 (N = 60, I=0.6667, PMT=$877.57, FV= 90,938.02).

The PV of payment reductions is $7,744.61 (104,318.93 – 96,574.32).

The cost of refinancing is $3,000 plus 1,931.49 (0.02 x 96,574.32), or 4,931.49.

The NPV of refinancing the loan is $2,813.12 (7,744.61 – 4,931.49). Therefore, you should refinance today if the new loan is expected to be outstanding for five years.
1. Mortgage banking companies:
   a. Collect monthly payments and forward them to the mortgage investor.

2. In recent years, the mortgage banking industry has experienced:
   d. Rapid consolidation.

3. Currently, which type of financial institution in the primary mortgage market provides the most funds for the residential (owner-occupied) housing market?
   d. Commercial banks

4. For all except very high loan-to-value conventional home loans the standard payment ratios for underwriting are:
   a. 28 percent and 36 percent

5. The numerator of the standard housing expense (front-end) ratio in home loan underwriting includes:
   c. Monthly principal, interest, property taxes, and hazard insurance.

6. The most profitable activity of residential mortgage bankers is typically
   b. Loan servicing.

7. Potential sub-prime borrowers include persons who:
   d. All of these.

8. Savings banks are now virtually indistinguishable from:
   b. Savings and loan associations.

9. The reduced importance of certain institutions in the primary mortgage market has been largely offset by an expanded role for others. Which has diminished and which has expanded?
   d. Savings and loan associations; mortgage bankers.

10. Warehousing refers to
    b. Short-term loans made by commercial banks to mortgage bankers.
Study Questions

1. What is the primary purpose of the risk-based capital requirements that Congress enacted as part of the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA)?

Solution: The goal of the Financial Institutions Reform, Recovery, and Enforcement Act is to charge banks and thrifts for risky lending practices and to reward safer practices. It supplanted the conventional regulatory approach of simply attempting to prohibit risky behavior even though banks and thrifts found the risk-taking profitable.

2. Explain what is meant by forward commitments and standby forward commitments. Which part of the mortgage banker’s pipeline is often hedged with forward commitments? With standby forward commitments? Why?

Solution: A forward commitment is a commitment now to sell/buy something in the future at a price set now. The commitment is mandatory; that is, the parties must complete the transaction. A standby forward commitment is the same arrangement except that one party, usually the seller, has the option of completing the transaction (delivering) or abandoning the contract.

Mortgage bankers use forward commitments to hedge against price changes on loans. This commitment obligates the secondary market investor to purchase, and the mortgage banker to sell, a pre-specified dollar amount of a certain type of loan. It is used for loans that are sure to be originated.

Standby forward commitments hedge price changes for loans that may or may not be originated. Standby forward commitments from secondary market investors give lenders the right, but not the obligation, to sell a certain dollar amount of a certain loan type to the issuer of the standby commitment.

3. Describe the basic activities of Fannie Mae in the secondary mortgage market. How are these activities financed?

Solution: Fannie Mae purchases both conventional and government-underwritten residential mortgages from mortgage companies, commercial banks, savings and loan associations, and other approved lenders. Part of these acquired mortgages are combined into packages or mortgage pools, mortgage-backed securities are written against the pools, and the MBSs are then sold to investors. Another part of the acquired mortgages are “held in portfolio.”

The agency only needs to fund securitized loans until they are sold as securities. For loans held in portfolio its obtains funds for the acquisition of mortgages by selling stock in the public capital market (its stock is traded on the New York
Stock Exchange), by obtaining (forward) commitment fees from originating lenders for loan purchases, by earning interest on its mortgage portfolio and other investments, and by selling notes and bonds to fixed-income investors.

4. Explain the importance of Fannie Mae and Freddie Mac to the housing finance system in the United States.

Solution: Fannie Mae and Freddie Mac have had a vast array of effects on the housing finance system of the U.S. Their first impact was to bring much-needed liquidity to housing finance. Probably their second effect was to standardize the documents and procedures in home mortgage lending. A third effect has been to encourage greater efficiency and flexibility in the process of home mortgage lending. Another effect has been to broaden the range of households able to obtain mortgage financing through more sophisticated and effective loan underwriting. Finally, they have had a great effect on the types of loans presently available to homeowners. Through all of this the GSEs have reduced the interest rates and costs of borrowing for homeowners.

5. Describe the activities mortgage bankers often engage in to generate income.

Solution: Mortgage bankers originate loans and resulting servicing rights. Income from the servicing rights is their primary source of income. In addition, they also provide ancillary services such as home insurance, home sales, or perhaps even life insurance.

6. Describe the mechanics of warehouse financing in mortgage banking.

Solution: A warehouse loan is a credit line provided by large banks to mortgage bankers to fund loans. The originated mortgage serves as security to the lender and the lender is repaid when the loan is closed and sold in the secondary mortgage market. In this arrangement the mortgage banker places the escrow deposits for the loan (deposits for expected property tax and hazard insurance payments) with the warehouse lender, at no interest charge. In return, the mortgage banker receives a favorable interest rate on the warehouse credit line.

7. Explain how affordable housing loans differ from standard home loans.

Solution: Affordable housing loans include a low down payment requirement and allow for extensive flexibility in one of the "three Cs" of underwriting, while maintaining the other two at more normal standards. Therefore, three factors involved in qualifying for a loan may be relaxed: the loan-to-value ratio, credit qualifications, and payment capacity.

8. List three “clienteles” for sub-prime home mortgage loans.
Solution: Three clienteles for sub-prime loans are borrowers with inadequate income documentation, borrowers who want 100 percent or greater financing, and borrowers who have a poor credit record.

9. You have just signed a contract to purchase your dream house. The price is $120,000 and you have applied for a $100,000, 30-year, 5.5 percent loan. Annual property taxes are expected to be $2,000. Hazard insurance will cost $400 per year. Your car payment is $400, with 36 months left. Your monthly gross income is $5,000. Calculate:
   a. The monthly payment of principal and interest (PI).
   b. One-twelfth of annual property tax payments and hazard insurance payments.
   c. Monthly PITI (principal, interest, taxes, and insurance).
   d. The housing expense (front-end) ratio.
   e. The total obligations (back-end) ratio.

Solution:

   a. $567.79
   b. 200
   c. 767.79
   d. 15.36% \(\frac{767.79}{5,000}\)
   e. 23.36% \(\frac{(767.79 + 200 + 400)}{5,000}\)

10. Contrast automated underwriting with the traditional “Three Cs” approach

Solution: In automated underwriting, the three Cs are used as factors with other criteria in a statistical evaluation that is designed to distinguish risky from safe borrower. A critical difference from the traditional approach is that credit evaluation is accomplished through a credit score. Two advantages of automated underwriting are that it is faster than traditional underwriting, and it enables lenders to more safely make “affordable housing” loans.
CHAPTER 13
REAL ESTATE BROKERAGE AND LISTING CONTRACTS

Test Problems

1. A salesperson who collects a down payment deposit from a potential buyer must place the funds in:
   e. The hands of his broker.

2. One of the most effective ways that salespersons or brokers can distinguish themselves as a preferred agent in a particular specialization of real estate brokerage is to:
   b. Obtaining a related industry designation.

3. A broker, who is the agent of a seller, must deal honestly and fairly with whom?
   e. Everyone involved in the transaction.

4. Real estate salespersons can lose their licenses for:
   c. Commingling escrow (trust) money with personal funds.

5. The state real estate commission is responsible for:
   c. Establishing education requirements for licensees.

6. Real estate brokers are paid commissions primarily for
   c. Providing a service.

7. A real estate broker is what type of agent for his or her principal?
   b. Special agent.

8. The sub agency relationship that traditionally has characterized multiple listing services (MLS) has tended to result in the wide-spread danger of:
   c. Unintended dual agency.

9. How are commission rates charged by real estate brokers determined?
   d. By agreement between broker and principal.
10. According to most listing contracts, a broker has earned a commission when
   c. The broker finds a buyer who is ready, willing, and able to buy on the terms
      specified in the listing contract.

Study Questions

1. Ted Richardson owns a large industrial building in your city that he wishes to sell. As a real estate broker, you would be delighted to obtain the listing on this property. You have worked with Richardson on two other transactions in which he was the buyer; therefore, you approach Richardson to request that he consider listing his property with you. Richardson agrees to do so, but indicates that he will not give you an exclusive right of sale listing, because he wants to retain the right to sell the property himself without owing a real estate commission. He will, however, give you an exclusive agency listing.

   a. What should you do? Should you accept such a listing from Richardson?
   b. Are there any provisions that you would propose including in the listing contract to give yourself some protection?

Solution:
   a. The exclusive agency listing is infrequently used and provides less protection to the broker than an exclusive right of sale listing. This arrangement should be used only if Mr. Richardson understands that I, as the agent, will be less willing to spend significant time and effort to market properties listed under this arrangement.
   b. As the broker, I would always prefer an exclusive right of sale listing, so that I would receive a commission regardless of who sold the property. Short of that, I might stipulate that I would receive compensation for expenses and time if the property is sold by someone else.

2. You are a real estate salesperson working for Good Earth, Realtors, Inc. You receive 50 percent of all commissions received by the firm (net of MLS fees) for which you were either the listing agent or the selling agent. The firm receives 40 percent of commissions for sales of properties it lists and 45 percent of commissions for sales of properties it sells in cooperation with other firms. Fifteen percent of all commissions for properties sold through the multiple listing service must be paid to the MLS. If you are both the listing and selling agent in a transaction, you receive 60 percent of the firm’s proceeds. If you are either the listing agent or the selling agent for a transaction in which another member of Good Earth is the selling agent or the listing agent, your split remains the same as when another firm cooperates in the transaction. Recently, you were the selling agent for a property that sold for $127,250. Another salesperson associated with Good Earth had listed the property two months previously for $135,000. The property was in the MLS, and the commission rate was 6.0 percent.

   a. How much in total commission, net of the MLS fee, will your firm receive?
b. What will be your split of the commission?

Solution

a. The firm will receive $6,489.75 (127,250*.06*.85)
b. The amount allocable to the selling agent is $1,717.88 (7,635*.45*.5)

3. If you owned your own real estate brokerage firm, how could you establish a niche in the market for your firm? In other words, how could you set your firm apart from other brokerage firms, and how could you create a unique image for your firm?

Solution: Developing a specialization is crucial. One option is to specialize by property type, serving sellers and buyers of commercial, industrial, residential, agricultural, office, or recreational properties. Another option is to limit my activities to a particular section of a city, such as the southeast or northwest areas. Brokers who specialize in large commercial or industrial properties may operate over a wide geographic area, sometimes even nationally or internationally. Developing a unique image for a brokerage firm is based on developing an area, or niche, of expertise.

4. How do you think the real estate marketing function will change in the future? Do you believe that real estate brokers will play a more important or a less important role in the selling-buying process? Why?

Solution: Real estate marketing will change in the future because increased use of Internet to market properties. The advent of the Internet has enhanced the possibility for innovation, such as the unbundling of services, in real estate marketing. Because the purchase of real estate is a complex endeavor, the role of the real estate agent in some capacity will likely not be eliminated. However, it is too early to determine what the ultimate effect of the Internet and other technology will be on the industry.

5. A friend of yours, Cindy Malvern, is moving to your town. She graduated from college a few years ago and has since been working in another city. Recently, however, she was offered a job at a higher salary in the regional office of a national insurance company located in the city where you attend college. Cindy has decided to buy a condominium, and because you are taking a real estate course, she asks you how to proceed.

You first look at the classified ads in the local newspaper and notice that a number of existing condominiums are for sale. Most of them are advertised by brokers, but some are advertised by the owners. You also notice ads by some local builders for new condominiums. You ask Cindy whether she prefers to buy a previously owned condominium or a new one. She says she doesn’t know; it depends on the condominium, the location, the price, and so on.
Next, you look in the Yellow Pages of the phone book and find several pages of ads for real estate brokers. You have heard of three or four of the firms, but you have had no direct contact or dealings with any of them.

a. How would you advise Cindy to proceed? Should she call a real estate brokerage firm? Why or why not?

b. If Cindy decides to call a real estate broker, how should she select the broker? What criteria should she use?

c. If Cindy decides to work through a real estate broker, can she look at new condominiums for sale by builders? If she buys a new condominium while working with a broker, would she or the builder have to pay a commission to the broker?

Solution:

a. First, Cindy might be advised to do some reading on the nature and experience of condo living as compared to traditional home ownership. She could read, for example, *How to Buy a Condominium or Townhouse*, Denise L. Evans, Sphinx Publishing, 2006. Cindy should definitely contact a brokerage firm. A brokerage firm can provide her with information about alternative choices of properties in the market, their prices, and information about how these properties may meet the buyer’s needs. The broker or salesperson can obtain information about such matters as utility expenses, taxes, maintenance, and legal issues regarding alternative properties. The broker or salesperson can also suggest ways of modifying or using the property in particular ways needed by the buyer. Finally, the broker or salesperson can help her find and compare financing alternatives. Moreover, since purchasing a condominium is more complex that for single family homes because of the Condominium declaration, bylaws and the presence of an owner association, Cindy may want to consider retaining a buyer’s agent, who is bound to work for her best interest.

b. Potential customers usually choose a brokerage firm based on reputation in the community, personal acquaintance with the broker or a salesperson, or recommendation by a satisfied customer. Some customers may also rely on the reputation or general image of a brokerage franchise operation.

c. Cindy can look at new condominiums for sale by builders. Any sales commission arrangement will be dictated by the seller and the agent. However, Cindy may have to pay a commission to the agent if she has entered into a buyer brokerage arrangement.

6. You decide to open a real estate office in your community, but you know the competition with established firms would be difficult. You believe that one method of drawing attention to your firm and obtaining clients that would otherwise go to other brokers is to advertise that you will sell any house in town.
and charge a commission of only $1,000. Do you believe such a marketing tactic would be successful? Why or why not?

Solution: Such a minimal commission is too low in relation to the service provided and to the costs borne by brokerage firm. The broker provides training, office space, telephones, and secretarial support so the salesperson can produce listings and sales. Although brokerage commissions must be established by negotiations between the broker and clients, a low commission could have an adverse effect on the perception of the firm. Potential customers usually choose a brokerage firm based on reputation in the community, personal acquaintance with the broker or a salesperson, or recommendation by a satisfied customer. Some customers may also rely on the reputation or general image of a brokerage franchise operation.
Chapter 14
Contracts for Sale and Closing

Test Problems

1. If a buyer defaults on a contract to purchase real property, which of the following is not a remedy the seller can pursue?
   a. Sue for assignment.

2. When contracts for the sale of real property are placed with a disinterested third party for executing and closing, they are said to be placed in:
   d. Escrow.

3. Which of the following conditions would be a defect to mutual assent in a contract for the sale of real property?
   a. One party attempts to perpetrate fraud on the other.

4. Oral evidence in contract disputes is prohibited by:
   e. The parol evidence rule.

5. Which of the following is one of the terms of a real estate contract?
   c. Price to be paid.

6. Real estate transactions do not close when the contract for sale is signed by both parties because:
   e. All of the above.

7. An earnest money deposit is:
   c. A payment of money by a buyer to evidence good faith.

8. In most straightforward transactions involving houses or other relatively small properties, the contract is:
   d. A form, with blanks filled in by the broker.

9. Equitable title to real estate is:
   e. The right to obtain legal title conveyed by the contract for sale.

10. The purpose of a closing statement is to:
    e. All but a above.
1. If a closing occurs on September 1 of a 365-day year, how will the year’s property tax of $900 be prorated? (Note: The taxes will be due on January 2 of the following year and the day of closing “belongs” to the buyer.)

Solution: Property taxes are assessed for the calendar year, and paid in arrears. Therefore, the seller owes from January 1 through the day before closing, a total of 243 days. The buyer owes for the remainder of the year, a total of 122 days. Distributing the tax bill in proportion to the days of ownership results in the following allocation:

Seller’s portion: \( \frac{243}{365} \times 900 = 0.666 \times 900 = 599.40 \)

Buyer’s portion: \( \frac{122}{365} \times 900 = 0.334 \times 900 = 300.60 \)

Since the buyer will pay the seller’s share of the taxes, in the closing statement the buyer is credited with $599.40 while the seller is charged that amount.

Use the following information to answer questions 2–5. Rosie Malone sold her house to D.M. Band. The contract was signed June 1, 2004, and closing was set for June 25, 2004. Rosie had prepaid her three-year hazard insurance policy in the amount of $425.00 on April 1, 2003, and D.M. agreed to assume it at closing. Water and sewer are paid the first of each month for the previous month. They are estimated to total $100 for June. D.M. also agrees to assume Rosie’s mortgage, which will have a balance of $85,385 on date of closing. Monthly payments are $817.83 payable on the first of the month for the previous month. The seller is responsible for day of closing.

2. How would the hazard insurance premium be prorated?
3. How would the water and sewer charges be prorated?
4. How will the mortgage assumption be entered?
5. How will the monthly mortgage payment be prorated?

2. Solution: The hazard insurance premium will be prorated on the basis of the total number of days that the policy spans. Since the policy spans a leap year (2004), the total number of days in the policy is 365 + 366 + 365 = 1,096. With the day of closing allocated to the seller, the seller “owns” the insurance policy for a total of 452 days. The buyer “owns” the policy for the remainder of the three years, or 644 days. Allocating the premium accordingly gives the following result:

Seller’s portion: \( \frac{452}{1096} \times 425 = 0.412 \times 425 = 175.10 \)

Buyer’s portion: \( \frac{644}{1096} \times 425 = 0.588 \times 425 = 249.90 \)

Since the seller has prepaid the buyer’s share of the premium, in the closing statement the seller is credited with $249.90 while the buyer is charged that amount.
3. **Solution**: The water and sewer charges must be prorated for the month of June. The charges are paid in arrears for the previous month. The seller “owns” 25 days of the month while the buyer “owns” the remaining 5 days. Thus the charges will be allocated as follows:

   Seller’s portion: \((25/30) \times 100 = .833 \times 100 = 83.30\)

   Buyer’s portion: \((5/30) \times 100 = .167 \times 100 = 16.70\)

   Since the buyer is paying the seller’s share of the charges, in the closing statement the buyer is credited with $83.30 while the seller is charged that amount.

4. **Solution**: Under the HUD-1 Settlement Statement the assumption of a mortgage is a benefit to the seller in lieu of cash, and is treated as a reduction in the amount due to the seller. For the buyer, the assumption is treated as an amount paid on behalf of the buyer.

5. **Solution**: The monthly mortgage payment is paid in arrears, or after the interest is actually accumulated. It will be prorated on a daily basis. Thus, as with the monthly water and sewer charges, the charges will be allocated as follows:

   Seller’s portion: \((25/30) \times 817.83 = .833 \times 817.83 = 681.25\)

   Buyer’s portion: \((5/30) \times 817.83 = .167 \times 817.83 = 156.58\)

   Since the buyer will pay the seller’s share of the interest, in the closing statement the buyer is credited with $681.25 while the seller is charged that amount.

6. The owner of a parcel of land containing approximately 25 acres contracted a debilitating disease and decided to sell his real estate as quickly as possible. Within a week, he received an offer of $12,250. The owner accepted this offer by signing a standard form contract that had been obtained and prepared by the buyer. Soon after, when the owner’s family discovered the situation, they convinced him he had sold the land at much too low a price and he should not complete the transaction.

   The owner commissioned an appraisal that showed the land to be worth $16,000, a difference of $150 per acre between the contract price and the property value. He then refused to attend the closing and to deliver title to the buyer. The buyer sued the owner for damages in the amount of the difference between the property value and the contract price ($3,750). The buyer contended he had a valid contract and he was damaged by the owner’s unwillingness to complete the transaction. The seller contended he was not of sound mind when he signed the contract and the price was so ridiculously low, the contract should not be enforced.

   Identify the issues the court probably would consider in deciding whether or not to enforce the contract.

   **Solution**: The court would need to consider the following issues: (a) Was the contract properly executed? Did it contain the seven requirements of a valid real estate contract? (b) The issue hinges on the first requirement, competent parties. The seller contends he was not
of sound mind when he agreed to sell the property. Thus, the court will have to decide this issue. Both sides probably would call experts to testify about the seller’s state of mind.

7. A couple decided to sell their house in Washington, D.C., without the aid of a real estate broker. Their asking price was $225,000, which they believed was about $15,000 less than the price they would need to list the property with a broker. They realized they would probably have to accept an offer as low as $220,000. Another couple looked at the house, liked it, and offered to buy it for $223,500. The sellers were delighted and suggested that they would fill in the blanks on a form sales contract used by many of the local real estate brokerage firms, and both parties could sign it. The buyers, however, objected, saying they preferred to write their own contract. The wife was an attorney who worked for the U.S. State Department, specializing in international law.

What advice would you have given the sellers?

Solution: The sellers should be wary of allowing the buyer to draft the sales contract. First, a person experienced in international law is unlikely to know all of the particular legal issues that should be addressed in a local real estate contract. Second, the buyer should be expected to draft a contract that addresses the buyer’s concerns and interests, but not necessarily the seller’s concerns and interests. The form contract commonly used in the local real estate community is likely to be a better choice for both its completeness in coverage and its balancing of the interests of the buyer and seller.

8. Given the following situation and facts, complete a closing settlement statement similar to that shown in Exhibit 20-4.

On May 15, 2004, Eric Martin signed a contract to purchase a rental house for $95,000. Closing is to occur June 8, 2004, with the day of closing to be counted as a day of ownership by the buyer. Eric can assume the seller’s first mortgage, which will have a balance of $49,000 on June 8. The seller, Reuben Smith, has agreed to take a second mortgage of $30,000 as part of the payment at closing. Eric paid an escrow deposit of $5,000 when he signed the purchase contract. Other pertinent facts include:

a. The monthly interest on the first mortgage is $347.08, which must be paid by the 20th of the month.

b. Reuben paid a hazard insurance policy for the calendar year 2004. The premium was $550, and Eric has agreed to purchase Reuben’s interest in the policy.

c. The monthly rental of $850 has been collected by Reuben for June.

d. The total amount of property tax for 2004 is estimated to be $1,200. The tax will be paid by Eric at the end of the year.

e. The broker will pay the following expenses for Reuben and will be reimbursed at the closing:

   - Abstract continuation  $  85.00
   - Attorney’s fee  200.00
   - Deed stamps (tax)  522.50
   - Brokerage commission (6%)  5,700.00
f. The broker will also pay the following expenses for Eric and will be reimbursed at the closing:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attorney’s fee</td>
<td>$150.00</td>
</tr>
<tr>
<td>Deed recording fee</td>
<td>6.00</td>
</tr>
<tr>
<td>Mortgage recording fee</td>
<td>10.00</td>
</tr>
<tr>
<td>Mortgage note stamps (tax)</td>
<td>45.00</td>
</tr>
<tr>
<td>Intangible tax on mortgage</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Solution:

Four items must be prorated between the seller and buyer:

1. Interest for the month of June for the existing mortgage.
2. Hazard insurance policy for the calendar year of 2004.
3. Rent for the month of June.

The prorations are as follows (Note that 2004 is a leap year):

Interest is paid in arrears, by the buyer. Thus the seller owes the buyer for the seller’s share of the bill:

Seller’s portion of interest: \((7/30) \times 347.08 = 80.99\)

Hazard insurance was prepaid by the seller for the calendar year. Thus, the buyer owes the seller for the buyer’s share of the premium:

Buyer’s portion of the hazard insurance premium: \((207/366) \times 550 = 311.07\)

Monthly rent was paid in advance to the seller. Thus, the seller owes the buyer his share of the rent:

Buyer’s portion of the monthly rent: \((25/30) \times 850 = 708.33\)

Property taxes are paid in arrears, by the buyer. So the seller owes the buyer for the seller’s portion of the payment:

Seller’s portion of the 2004 property taxes: \((159/366) \times 1,200 = 521.31\)

These prorations, together with the other information above, result in the closing statement as displayed.
A. Settlement Statement

B. Type of Loan

C. Note: This form is furnished to give you a statement of actual settlement costs. Amounts paid to and by the settlement agent are shown. Items marked "(p.o.c.)" were paid outside the closing, they are shown here for informational purposes and are not included in the total.

D. Name & Address of Borrower: Eric Martin
E. Name & Address of Seller: Reuben Smith
F. Name & Address of Lender: 

G. Property Location:

H. Settlemnt Agent:

J. Summary of Borrower's Transaction

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>100. Gross Amount Due From Borrower</td>
<td>95,000.00</td>
</tr>
<tr>
<td>101. Contract sales price</td>
<td>95,000.00</td>
</tr>
<tr>
<td>102. Personal property</td>
<td></td>
</tr>
<tr>
<td>103. Settlement charges to borrower (line 1400)</td>
<td>271.00</td>
</tr>
<tr>
<td>104.</td>
<td></td>
</tr>
<tr>
<td>105.</td>
<td></td>
</tr>
</tbody>
</table>

K. Summary of Seller's Transaction

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400. Gross Amount Due To Seller</td>
<td></td>
</tr>
<tr>
<td>401. Contract sales price</td>
<td></td>
</tr>
<tr>
<td>402. Personal property</td>
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</tr>
<tr>
<td>403.</td>
<td></td>
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<tr>
<td>404.</td>
<td></td>
</tr>
</tbody>
</table>

L. Adjustments for items paid by seller in advance

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>105. City/town taxes</td>
<td></td>
</tr>
<tr>
<td>107. County taxes</td>
<td></td>
</tr>
<tr>
<td>108. Assessments</td>
<td></td>
</tr>
<tr>
<td>109. Prepaid hazard insurance for 6/08 - 12/31</td>
<td>311.07</td>
</tr>
<tr>
<td>110.</td>
<td></td>
</tr>
<tr>
<td>111.</td>
<td></td>
</tr>
<tr>
<td>112.</td>
<td></td>
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</tbody>
</table>

M. Adjustments for items paid by buyer

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<tbody>
<tr>
<td>500.</td>
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<td>501. Excess deposit</td>
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<td>502. Settlement charges to seller (line 1400)</td>
<td>6,057.50</td>
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<tr>
<td>503.</td>
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<tr>
<td>504.</td>
<td></td>
</tr>
<tr>
<td>505.</td>
<td></td>
</tr>
<tr>
<td>506. Purchase money mortgage to buyer</td>
<td>33,000.00</td>
</tr>
<tr>
<td>507.</td>
<td></td>
</tr>
<tr>
<td>508.</td>
<td></td>
</tr>
<tr>
<td>509.</td>
<td></td>
</tr>
</tbody>
</table>

N. Adjustments for items unpaid by seller

<table>
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<tr>
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<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>210. City/town taxes</td>
<td></td>
</tr>
<tr>
<td>211. County taxes</td>
<td></td>
</tr>
<tr>
<td>212. Assessments</td>
<td></td>
</tr>
<tr>
<td>213. Total property taxes for 1/01 - 6/07</td>
<td>521.31</td>
</tr>
<tr>
<td>214. Mortgage interest for 6/01 - 6/07</td>
<td>80.99</td>
</tr>
<tr>
<td>215. Rent for 6/08 - 6/09</td>
<td>651.67</td>
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<tr>
<td>216.</td>
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</tr>
<tr>
<td>217.</td>
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<tr>
<td>218.</td>
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<tr>
<td>219.</td>
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</table>

O. Total Paid By/For Borrower

<table>
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<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>220.</td>
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<tr>
<td>221.</td>
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</table>

P. Cash At Settlement From/To Borrower

<table>
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<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>300.</td>
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</tr>
<tr>
<td>301. Gross Amount due from borrower (line 120)</td>
<td>95,000.00</td>
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<tr>
<td>302. Less amounts paid by borrower (line 220)</td>
<td>10,326.10</td>
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</table>

Q. Cash From/To Seller

<table>
<thead>
<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>303.</td>
<td></td>
</tr>
<tr>
<td>304.</td>
<td></td>
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</tbody>
</table>

Section 5 of the Real Estate Settlement Procedures Act (RESPA) requires the following: HUD must develop a Special Information Statement to help persons borrowing money to finance the purchase of residential real estate to better understand the nature and costs of real estate settlement services; each lender must provide the booklet to all applicants from whom it receives or for whom it prepares a written application to borrow money to finance the purchase of residential real estate; lenders must prepare and distribute with the booklet a Good Faith Estimate of the settlement costs that the borrower is likely to incur in connection with the settlement. These disclosures are mandatory.

Section 6(a) of RESPA mandates that HUD develop and prescribe this standard form to be used at the time of loan settlement to provide full disclosure of all charges imposed upon the borrower and seller. These are third-party disbursements that are designed to provide the borrower with pertinent information during the settlement process in order to be a better shopper.

The Public Reporting Burden for this collection of information is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

The information requested does not lend itself to confidentiality.
<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
<th>Paid From Borrowers Funds at Settlement</th>
<th>Paid From Seller's Funds at Settlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>700.</td>
<td>Total Sales/Broker's Commission based on price $</td>
<td>@ % =</td>
<td>5,700.00</td>
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<tr>
<td>701.</td>
<td>Division of Commission (line 700) as follows:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>702.</td>
<td>Commission paid at Settlement</td>
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<td></td>
</tr>
<tr>
<td>800.</td>
<td>Items Payable in Connection With Loan</td>
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<td></td>
</tr>
<tr>
<td>801.</td>
<td>Loan Origination Fee</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>802.</td>
<td>Loan Discount</td>
<td>%</td>
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</tr>
<tr>
<td>803.</td>
<td>Appraisal Fee</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>804.</td>
<td>Credit Report</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>805.</td>
<td>Lender's Inspection Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>806.</td>
<td>Mortgage Insurance Application Fee</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>807.</td>
<td>Assumption Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>808.</td>
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<tr>
<td>810.</td>
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<tr>
<td>811.</td>
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<tr>
<td>900.</td>
<td>Items Required By Lender To Be Paid In Advance</td>
<td>@$/day</td>
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<tr>
<td>901.</td>
<td>Interest from</td>
<td>to</td>
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<tr>
<td>902.</td>
<td>Mortgage Insurance Premium for</td>
<td>months to</td>
<td></td>
</tr>
<tr>
<td>903.</td>
<td>Hazard Insurance Premium for</td>
<td>years to</td>
<td></td>
</tr>
<tr>
<td>904.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>905.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000.</td>
<td>Reserves Deposited With Lender</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1001.</td>
<td>Hazard insurance</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1002.</td>
<td>Mortgage Insurance</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1003.</td>
<td>City property taxes</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1004.</td>
<td>County property taxes</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1005.</td>
<td>Annual assessments</td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1006.</td>
<td></td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1007.</td>
<td></td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1008.</td>
<td></td>
<td>months @ $ per month</td>
<td></td>
</tr>
<tr>
<td>1100.</td>
<td>Title Charges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1101.</td>
<td>Settlement or closing fee</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1102.</td>
<td>Abstract or title search</td>
<td>to</td>
<td>85.00</td>
</tr>
<tr>
<td>1103.</td>
<td>Title examination</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1104.</td>
<td>Title insurance binder</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1105.</td>
<td>Document preparation</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1106.</td>
<td>Notary fees</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1107.</td>
<td>Attorney's fees</td>
<td>to Buyer's attorney/ Seller's attorney</td>
<td>150.00 200.00</td>
</tr>
<tr>
<td></td>
<td>(includes above items numbers: )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1108.</td>
<td>Title insurance</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(includes above items numbers: )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1109.</td>
<td>Lender's coverage</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>1110.</td>
<td>Owner's coverage</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>1111.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1112.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1113.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200.</td>
<td>Government Recording and Transfer Charges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1201.</td>
<td>Recording fees: Deed $</td>
<td>6.00 ; Mortgage $</td>
<td>10.00 ; Releases $</td>
</tr>
<tr>
<td>1202.</td>
<td>City county tax/stamps: Deed $</td>
<td></td>
<td>Mortgage $</td>
</tr>
<tr>
<td>1203.</td>
<td>State tax/stamps: Deed $</td>
<td>522.50 ; Mortgage $</td>
<td>45.00</td>
</tr>
<tr>
<td>1204.</td>
<td>Intangible tax on mortgage</td>
<td>60.00</td>
<td>60.00</td>
</tr>
<tr>
<td>1205.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300.</td>
<td>Additional Settlement Charges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1301.</td>
<td>Survey</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1302.</td>
<td>Pest inspection</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>1303.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1304.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1305.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1400.</td>
<td>Total Settlement Charges (enter on lines 103, Section J and 502, Section K)</td>
<td>271.00</td>
<td>6,507.50</td>
</tr>
</tbody>
</table>
CHAPTER 15
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 the compound rate of interest is 10 percent?
   d. $336.37

2. How much would you pay for the right to receive $80 at the end of 10 years if you can earn 15 percent interest?
   b. $19.77

3. How much would you pay to receive $50 in one year and $60 in the second year if you can earn 15 percent interest?
   a. $88.85

4. 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

5. How much would you pay for the right to receive nothing a year for the next 10 years and $300 a year for the following 10 years if you can earn 15 percent interest?
   a. $372.17

6. 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

7. 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?
   c. $44,289.03

8. 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. $171,835.94

9. Assume an income-producing property 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 the current price?
b. No, because the project has a net present value of -$1,954.91.

Study Questions

1. Dr. Bob Jackson owns a parcel of land that a local farmer has offered to rent 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.

\[
\begin{array}{|c|c|c|c|}
\hline
N & I & PV & PMT \\
\hline
10 & 10 \% & =? & 3,200 \\
\hline
\end{array}
\]

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

2. You are able to buy an investment 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:

\[
\begin{array}{|c|c|c|c|}
\hline
N & I & PV & PMT \\
\hline
3 & =? & -1,000 & 438 \\
\hline
\end{array}
\]

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 discount rates of 8 percent and 20 percent.

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$3,000</td>
</tr>
<tr>
<td>2</td>
<td>$4,000</td>
</tr>
<tr>
<td>3</td>
<td>$6,000</td>
</tr>
<tr>
<td>4</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

**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 investment opportunities. Assume a 16 percent discount rate for the NPV calculations:

<table>
<thead>
<tr>
<th>Year</th>
<th>Project 1 Cash Flow</th>
<th>Project 2 Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-$10,000</td>
<td>-$10,000</td>
</tr>
<tr>
<td>1</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>2</td>
<td>2,000</td>
<td>12,000</td>
</tr>
<tr>
<td>3</td>
<td>12,000</td>
<td>1,800</td>
</tr>
</tbody>
</table>

**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. Additionally, 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 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.

\[
\begin{array}{cccc}
N &=& 1 \\
I &=& 10 \\
PV &=& ? \\
PMT &=& 0 \\
FV &=& 1,000
\end{array}
\]

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

\[
\begin{array}{cccc}
N &=& 1 \\
I &=& 8 \\
PV &=& ? \\
PMT &=& 0 \\
FV &=& 1,000
\end{array}
\]

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

\[
\begin{array}{cccc}
N &=& 1 \\
I &=& 12 \\
PV &=& ? \\
PMT &=& 0 \\
FV &=& 1,000
\end{array}
\]

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

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate</td>
<td>$1,300</td>
<td>$1,300</td>
<td>$1,300</td>
<td>$1,300</td>
<td>$9,000</td>
</tr>
<tr>
<td>Bond</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>Zero Coupon</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$18,000</td>
</tr>
</tbody>
</table>
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; bond, 369.5; and zero coupon, 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?

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

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>-25,000</td>
<td>0</td>
<td>?</td>
</tr>
</tbody>
</table>

8. If you deposit $1 at the end of each of the next ten years and these deposits earn interest at 10 percent, 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.

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>?</td>
</tr>
</tbody>
</table>

9. If you deposit $50 per month in a savings and loan association at 10 percent interest, 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.

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>144</td>
<td>10/12</td>
<td>0</td>
<td>50</td>
<td>?</td>
</tr>
</tbody>
</table>

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?

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

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>15</td>
<td>?</td>
<td>0</td>
<td>10,000</td>
</tr>
</tbody>
</table>

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?

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

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>10</td>
<td>?</td>
<td>0</td>
<td>50,000</td>
</tr>
</tbody>
</table>

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 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.

\[
\begin{array}{cccc}
N & I & PV & PMT & FV \\
5 & 10 & ? & 0 & 625,000 \\
\end{array}
\]

13. If someone pays you $1 a year for 20 years, what is the 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.

\[
\begin{array}{cccc}
N & I & PV & PMT & FV \\
20 & 10 & ? & 1 & 0 \\
\end{array}
\]

14. You are at retirement age and one of your benefit options is to accept an annual 
annuity of $7,500 for 15 years. What lump sum settlement, if paid today, would have the 
same present value as the $7,500 annual annuity? Assume a 10 percent discount rate.

**Solution:** At a 10% discount rate, the present value of this series of future payments is 
$57,045.60. This is the lump sum equivalent of receiving $7,500 for 15 years.

\[
\begin{array}{cccc}
N & I & PV & PMT & FV \\
15 & 10 & ? & 7,500 & 0 \\
\end{array}
\]

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

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

\[
\begin{array}{cccc}
N & I & PV & PMT & FV \\
96 & 8/12 & 0 & ? & 10,000 \\
\end{array}
\]

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.
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%.

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:

<table>
<thead>
<tr>
<th>End of Year</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$50,000</td>
</tr>
<tr>
<td>2</td>
<td>$50,000</td>
</tr>
<tr>
<td>3</td>
<td>$50,000</td>
</tr>
<tr>
<td>4</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

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?

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:

<table>
<thead>
<tr>
<th>N</th>
<th>I</th>
<th>PV</th>
<th>PMT</th>
<th>FV</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>11%</td>
<td>$?</td>
<td>$50,000</td>
<td>0</td>
</tr>
</tbody>
</table>

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%.
Chapter 16
Mortgage Calculations and Decisions

Test Problems

1. The most typical adjustment interval on an adjustable rate mortgage (ARM) once the interest begins to change is:
   b. One year.

2. A characteristic of a partially amortized loan is:
   b. A balloon payment is required at the end of the loan term.

3. If a mortgage is to mature (i.e. become due) at a certain future time without any reduction in principal, this is called:
   d. Interest-only mortgage.

4. The dominant loan type originated by most financial institutions is the:
   a. Fixed-payment, fully amortized mortgage

5. Which of the following statements is true about 15-year and 30-year fixed-payment mortgages?
   d. Assuming that they can afford the payments on both mortgages, borrowers should choose a 30-year mortgage over an otherwise identical 15-year loan if their discount rate (opportunity cost) exceeds the mortgage rate.

6. Adjustable rate mortgages (ARMs) commonly have all of the following except:
   e. Inflation index.

7. The annual percentage rate (APR) was created in:

8. On a level-payment loan with 12 years (144 payments) remaining, at an interest rate of 9% percent, and with a payment of $1,000, the balance is:
   c. 87,871.

9. On the following loan, what is the best estimate of the effective borrowing cost if the loan is prepaid in six years?

   Loan: $100,000
   Interest rate: 7 percent
   Term: 180 months
   Up-front costs: 7 percent of loan amount

   d. 8.7 percent.
10. Lender’s yield differs from effective borrowing costs (EBC) because:
c. EBC accounts for additional up-front expenses that lender’s yield does not.

**Study Questions**

1. Calculate the original loan size of a fixed-payment mortgage if the monthly payment is $1,146.78, the annual interest is 8.0%, and the original loan term is 15 years.

   *Solution:* Rounding to the nearest whole dollar, the original size of the loan is $120,000. This problem is solved using the following keystrokes on a financial calculator:

   \[
   \begin{array}{|c|c|c|c|c|}
   \hline
   N & 180 & I & 8/12 & PMT = $1,146.78 & FV = 0 \\
   \hline
   \end{array}
   \]

2. For a loan of $100,000, at 7 percent interest for 30 years, find the balance at the end of 4 years and 15 years.

   *Solution:* The loans balance at the end of 4 years and 15 years is $95,474.55, and $74,018.87, respectively, as solved below

   First, the loan payment must be calculated. The loan payment is $665.30, as solved below:

   \[
   \begin{array}{|c|c|c|c|c|c|}
   \hline
   N & 360 & I & .5833 & PV = -$100,000 & PMT = ? & FV = 0 \\
   \hline
   \end{array}
   \]

   The balance at the end of four years is $95,474.55, which is calculated by entering the following data into a financial calculator.

   \[
   \begin{array}{|c|c|c|c|c|c|}
   \hline
   N & 312 & I & .5833 & PV = ? & PMT = $665.30 & FV = 0 \\
   \hline
   \end{array}
   \]

   The balance at the end of 15 years is $74,018.87, which is calculated by entering the following data into a financial calculator.

   \[
   \begin{array}{|c|c|c|c|c|c|}
   \hline
   N & 180 & I & .5833 & PV = ? & PMT = $665.30 & FV = 0 \\
   \hline
   \end{array}
   \]

3. On an adjustable rate mortgage, do borrowers always prefer smaller (tighter) rate caps that limit the amount the contract interest rate can increase in any given year or over the life of the loan?

   *Solution:* Borrower preference is dependent, at least in part, on their expectations of future interest rates. Borrowers choosing ARMs with price caps are charged a higher initial interest rate, a higher margin, more upfront costs, or a combination of the three. The borrower must consider these factors. For example, borrowers may prefer larger caps if they believe interest rates will not increase substantially.
In this scenario, the loan interest rate will be lower because the borrower, not the lender, bears the risk of interest rates increasing.

4. Consider a $75,000 mortgage loan with an annual interest rate of 8%. The loan term is 7 years, but monthly payments will be based on a 30-year amortization schedule. What is the monthly payment? What will be the balloon payment at the end of the loan term?

_Solution:_ The monthly payment is $550.32 and the balloon payment is $69,358.07.

The payment is calculated using the following calculator keystrokes:

\[
\begin{array}{c|c|c|c|c|c}
N & I & PV & PMT=? & FV \\
360 & .667 & -75000 & ? & 0 \\
\end{array}
\]

The balloon payment at the end of year seven is $69,358.07, as calculated with the following calculator keystrokes:

\[
\begin{array}{c|c|c|c|c|c}
N & I & PV=? & PMT=550.32 & FV=? \\
276 & .667 & ? & 550.32 & 0 \\
\end{array}
\]

5. A mortgage banker is originating a level-payment mortgage with the following terms:

- Annual interest rate: 9 percent
- Loan term: 15 years
- Payment frequency: monthly
- Loan amount: $160,000
- Total up-front financing costs (including discount points): $4,000
- Discount points to lender: $2,000

a. Calculate the annual percentage rate (APR) for Truth-in-Lending purposes.
b. Calculate the lender’s yield with no prepayment.
c. Calculate the lender’s yield with prepayment is five years.
d. Calculate the effective borrowing costs with prepayment in five years.

_Solution:_

The first step is to solve for the payment, which is $1,622.83, with the following calculator keystrokes:

\[
\begin{array}{c|c|c|c|c|c}
N & I & PV & PMT=? & FV \\
180 & .75 & -160000 & ? & 0 \\
\end{array}
\]

a. The APR is approximately 9.43 percent as solved below:

\[
\begin{array}{c|c|c|c|c|c}
N & I=? & PV & PMT=1622.83 & FV=0 \\
180 & ? & -156000 & 1622.83 & 0 \\
\end{array}
\]
b. The lender’s yield to maturity is 9.22 percent

\[
\begin{array}{|c|c|c|c|c|}
\hline
N & I & PV & PMT & FV \\
\hline
180 & ? & -$158,000 & $1,622.83 & 0 \\
\hline
\end{array}
\]

c. In order to calculate the lender’s yield, the loan balance remaining at the end of year five must first be calculated

\[
\begin{array}{|c|c|c|c|c|}
\hline
N & I & PV & PMT & FV \\
\hline
120 & .75 & ? & $1,622.83 & 0 \\
\hline
\end{array}
\]

The remaining balance is $128,108.67. With this information, the lender’s yield is 9.34 percent as calculated below:

\[
\begin{array}{|c|c|c|c|c|}
\hline
N & I & PV & PMT & FV \\
\hline
60 & ? & -$158,000 & $1,622.83 & $128,108.67 \\
\hline
\end{array}
\]

d. The effective borrowing cost with prepayment in five years is 9.69 percent.

\[
\begin{array}{|c|c|c|c|c|}
\hline
N & I & PV & PMT & FV \\
\hline
60 & ? & -$156,000 & $1,622.83 & $128,108.67 \\
\hline
\end{array}
\]

6. Give some examples of up-front financing costs associated with residential mortgages. What rule can one apply to determine if a settlement (closing) cost should be included in the calculation of the effective borrowing costs?

Solution: Examples of upfront costs include discount points, loan origination fee, loan application and documentation preparation fees, appraisal fees, credit check fees, title insurance, mortgage insurance, charges to transfer the deed and record the mortgage, pest inspection, survey costs, and attorney’s fees.

The effective borrowing cost calculation should not include expenses that would be incurred if no mortgage financing were obtained. Therefore, only upfront costs associated with obtaining the mortgage funds should be included.

7. A homeowner is attempting to decide between a 15-year mortgage loan at 5.5 percent and a 30-year loan at 5.90 percent. What would you advise? What would you advise if the borrower also has a large amount of credit card debt outstanding at a rate of 15 percent?

Solution: If the borrower does not have a significant amount of debt at a rate well above the rates on the loan, then the difference in mortgage rates should be viewed as a maturity premium difference, and the borrower can consider the loans as equivalent on a purely financial basis. If the borrower owes significant amounts of high interest consumer debt, then the longer-term loan is preferable. It will have a lower present value (present cost) discounted at the borrower’s opportunity cost. In other words, if the opportunity costs of the household are substantially greater than the mortgage interest rate, the household will be better off with the longer-term mortgage.
8. Suppose an ARM loan has a margin of 2.75, an initial index of 3.00 percent, a teaser rate for the first adjustment period of 4.00 percent, and caps of 1.00 and 5.00 percent. If the index remains unchanged for the second adjustment period, what will be the interest rate on the loan? If there is more than one possible answer, what does the outcome depend on?

Solution: If the periodic cap applies to the teaser rate, the interest rate in year two will be constrained to 5.00 percent. If the cap applies only to index plus margin, the rate in year two would be 5.75 percent.

9. Assume the following for a one-year rate adjustable rate mortgage loan that is tied to the one-year Treasury rate:

<table>
<thead>
<tr>
<th>Loan amount:</th>
<th>$150,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual rate cap:</td>
<td>2%</td>
</tr>
<tr>
<td>Life-of-loan cap:</td>
<td>5%</td>
</tr>
<tr>
<td>Margin:</td>
<td>2.75%</td>
</tr>
<tr>
<td>First-year contract rate:</td>
<td>5.50%</td>
</tr>
<tr>
<td>One-year Treasury rate at end of year 1:</td>
<td>5.25%</td>
</tr>
<tr>
<td>One-year Treasury rate at end of year 2:</td>
<td>5.50%</td>
</tr>
<tr>
<td>Loan term in years:</td>
<td>30</td>
</tr>
</tbody>
</table>

Given these assumptions, calculate the following:

a. Initial monthly payment
b. Loan balance end of year 1
c. Year 2 contract rate
d. Year 2 monthly payment
e. Loan balance end of year 2
f. Year 3 contract rate
g. Year 3 payment

Solution:

a. The first year payment, based on an interest rate of 5.5 percent, is $851.68, as calculated below:

\[ N = 360 \quad I = .4583 \quad PV = -$150,000 \quad PMT =? \quad FV =0 \]

b. The loan balance at the end of year one is $147,979, as shown below:

\[ N = 348 \quad I = .4583 \quad PV = ? \quad PMT =$851.68 \quad FV =0 \]

c. Assuming the annual cap applies to the teaser rate, the interest rate in year two is 5.50 plus 2.00, or 7.50 percent.
d. With a remaining term of 29 years, interest rate of 7.5 percent and a balance of $147,979.41, the new payment in year 2 is $1,044.32, calculated on a financial calculator with the following keystrokes.

\[ N = 12 \quad I = .6250 \quad PV = -147,979 \quad PMT = ? \quad FV = 0 \]

e. The loan balance at the end of year two is $146,496:

\[ N = 336 \quad I = .6250 \quad PV = ? \quad PMT = 1,044.32 \quad FV = 0 \]

f. The year three contract interest rate is index plus margin, or 8.25 percent.

g. The year three payment, based on a balance of $146,496, remaining term of 28 years and an interest rate of 8.25 percent, is $1,119.

10. Assume the following:

<table>
<thead>
<tr>
<th>Loan Amount:</th>
<th>$100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rate:</td>
<td>10 percent annually</td>
</tr>
<tr>
<td>Term:</td>
<td>15 years, monthly payments</td>
</tr>
</tbody>
</table>

a. What is the monthly payment?

b. What will be the loan balance at the end of nine years?

c. What is the effective borrowing cost on the loan if the lender charges 3 points at origination and the loan goes to maturity?

d. What is the effective borrowing cost on the loan if the lender charges 3 points at origination and the loan is prepaid at the end of year 9?

Solution:

a. The monthly payment is $1,074.61.

\[ N = 180 \quad I = .8333 \quad PV = -100,000 \quad PMT = ? \quad FV = 0 \]

b. The loan balance at the end of 9 years is $58,006.

\[ N = 252 \quad I = .8333 \quad PV = ? \quad PMT = 1,074.61 \quad FV = 0 \]

c. The effective borrowing cost of the loan, with financing costs of 3 discount points, that is held to maturity and is 10.54 percent:

\[ N = 180 \quad I = ? \quad PV = -97,000 \quad PMT = 1,074.61 \quad FV = 0 \]

d. The effective borrowing cost of the loan, with financing costs of 3 points, that is prepaid at the end of year nine and is 10.61 percent:

\[ N = 108 \quad I = ? \quad PV = -97,000 \quad PMT = 1,074.61 \quad FV = 58,004.90 \]
CHAPTER 17
Commercial Mortgage Types and Decisions

Test Problems

1. Due-on-sales clauses are included in commercial mortgages primarily to protect lenders from:
   b. Default risk.

2. Consider a 30-year, 7 percent, fixed rate, fully amortizing mortgage with a yield maintenance provision. Relative to this mortgage, a 10-year balloon mortgage with the same interest rate and yield maintenance provisions will primarily reduce the lender’s:
   a. Interest rate risk.

3. Lockout provisions are primarily intended to reduce the lender’s:
   c. Reinvestment risk

4. The tax-benefits associated with installment sales are:
   b. Captured exclusively by the seller.

5. Which of the following statements is most accurate?
   b. Joint ventures decrease the amount of equity capital the developer/borrower must invest in the project.

6. Which of the following financing structures provides for 100 percent financing?
   d. Complete (land and building) sale-leaseback

7. Using financial leverage on a real estate investment can be for the purpose of all of the following except:
   d. Reduction of financial risk for the leveraged investment.

8. Which of these ratios is an indicator of the financial risk for an income property?
   d. Both a and b, but not c

9. If the property’s NOI is expected to be $22,560 operating expenses $12,250, and the debt service $19,987, the debt coverage ratio (DCR) is approximately equal to:
   b. 1.13.

10. With a mezzanine loan
    c. the borrower’s promise to pay is secured by the equity interest in the borrower’s limited partnership or limited liability company.
1. Discuss several differences between long-term commercial mortgages and their residential counterparts.

*Solution:* Commercial mortgages have shorter terms than residential mortgages; five to ten-year terms are common for commercial mortgages and residential mortgages can be payable for up to 30 years. Commercial loans are typically nonrecourse, while residential borrowers are personally responsible for the amount borrowed. Restrictions on prepayment are commonly included with commercial mortgages but not residential mortgages. Residential mortgages are typically standardized; in contrast, most commercial mortgages do not conform to any specific standards or regulations, although this is changing rapidly as an increasing number of commercial real estate loans are being securitized.

2. Answer the following questions on financial leverage, value, and return:
   a. Define financial risk
   b. Should the investor select the origination LTV that maximizes the IRR on equity? Explain why or why not.

*Solution:*

a. Financial risk refers to the risk that NOI will be less than debt service. A positive correlation exists between the amount of debt service and financial risk.

b. Higher expected returns are gained from additional leverage but the average return per unit of risk decreases as leverage increases. Leverage maximizes return when a property is performing well but amplifies the downside when a property is performing poorly. Therefore, the use of leverage may increase the investor’s going-in IRR on equity, but financial leverage also increases the riskiness of the equity because of the increased risk of default and the increased sensitivity of the realized return on equity to changes in rental rates and resale values. Thus, the increase in expected return from the use of debt may not be large enough to offset the corresponding increase in risk.

3. Distinguish between recourse and nonrecourse financing.

*Solution:* When a note is used and the borrower has personal liability, the arrangement is known as recourse financing. The borrower has personal responsibility for recourse debt, and, upon default and foreclosure, the borrower is liable for the difference between the proceeds generated from foreclosure sale and the amount owed to the lender. When a note is not used and the borrower does not have personal liability for the debt, the arrangement is known as nonrecourse financing. In these cases, the provisions of the debt are contained in the mortgage or a separate contract. The borrower is not personally liable for nonrecourse debt.
and the lender receives the property pledged as collateral in satisfaction of the loan deficiency.

4. Explain lockout provisions and yield-maintenance agreements. Does the inclusion of one or both of these provisions affect the borrower’s cost of debt financing? Explain.

**Solution:** A lockout provision prohibits prepayment of a commercial mortgage over a specified period after the origination of the mortgage. This provision reduces a lender’s reinvestment risk from prepayments in falling interest rate environments.

A yield-maintenance agreement is another mechanism for creating a prepayment penalty. If interest rates decline and borrowers could prepay at par, lenders would have to reinvest the remaining loan balance at current (lower) rates. The prepayment penalty paid by borrowers with a yield maintenance agreement is set equal to the present value of the lender’s loss resulting from reinvesting the remaining loan balance at the lower market rates. The yield-maintenance provision restores the lender’s position as if rates had never changed and no prepayment had occurred.

The borrower’s cost of debt financing is effectively increased because of these provisions. Unlike residential borrowers, who generally have the ability to prepay or refinance existing debt without charge, commercial borrowers are unable to reduce their cost of debt financing if market interest rates fall.

5. Assume the annual interest rate on a $500,000 7-year balloon mortgage is 6 percent. Payments will be made monthly based on a 30-year amortization schedule.
   a. What will be the monthly payment?
   b. What will be the balance of the loan at the end of year 7?
   c. What will be the balance of the loan at the end of year 3?
   d. Assume that interest rates have fallen to 4.5% at the end of year 3. If the remaining mortgage balance at the end of year 3 is refinanced at the 4.5 percent annual rate, what would be the new monthly payment assuming a 27-year amortization schedule?
   e. What is the difference in the old 6 percent monthly payment and the new 4.5 percent payment?
   f. What will be the remaining mortgage balance on the new 4.5 percent loan at the end of year 7 (four years after refinancing)?
   g. What will be the difference in the remaining mortgage balances at the end of year 7 (four years after refinancing)?
   h. At the end of year 3 (beginning of year 4), what will be the present value of the difference in monthly payments in years 4-7, discounting at an annual rate of 4.5 percent?
i. At the end of year 3 (beginning of year 4), what will be the present value of the difference in loan balances at the end of year 7, discounting at an annual rate of 4.5 percent?

j. At the end of year 3 (beginning of year 4), what will be the total present value of lost payments in years 4-7 from the lender’s perspective?

k. If the mortgage contains a yield maintenance agreement that requires the borrower to pay a lump sum prepayment penalty at the end of year 3 equal to the present value of the borrower’s lost payments in years 4-7, what should that lump sum penalty be?

Solution:

a. Based on a 30-year amortization schedule, the monthly payment is $2,997.75 (n=360, I =6/12, PV=-500,000, and FV = 0).

b. The balance of the loan at the end of year 7 is $448,197 (solving for the present value of the remaining payments: N=276, I =6/12, PV= ?, PMT = 2,997.75, and FV=0).

c. The balance of the loan at the end of year 3 is $480,420 (solving for the present value of the remaining payments: N=324, I =6/12, PV= ?, PMT = 2,997.75, and FV=0).

d. The new monthly payment assuming a 27-year amortization schedule is $2,564.10 (n=324, I =4.5/12, PV = 480,420.35, and FV = 0).

e. The new loan payment on the new 4.5 percent loan is $433.65 less than the payment on the old 6 percent loan.

f. The remaining mortgage balance on the new 4.5 percent loan at the end of year 7 (four years after refinancing) is $440,400 (solving for the future value: n=48, I = 4.5/12, PV = 480,420 and PMT = 2,564.10).

gh. The difference in the remaining mortgage balances at the end of year 7 (four years after refinancing) is as follows: The balance at year seven for the original loan at 7% is $448,197. The balance of the new loan fours years after refinancing is $440,400. The difference between the two is $7,797.

h. At the end of year 3 (beginning of year 4), the present value of the differences in monthly payments in years 4-7, discounting at an annual rate of 4.5 percent, is $19,017 (n = 48, I = 4.5/12, PMT= 433.65, and FV = 0).

i. At the end of year 3 (beginning of year 4), the present value of the differences in loan balances at the end of year 7, discounting at an annual rate of 4.5 percent, is $6,515 (n = 48, I = 4.5/12, PMT = 0, and FV = 7,797).

j. At the end of year 3 (beginning of year 4), the total present value of lost payments in years 4-7 from the lender’s perspective is $19,017 (n = 48, I = 4.5/12, PMT = 433.65, and FV = 0)

k. The lump sum payment should be 25,532 ($19,017 + $6,515).
6. Consider the stand-alone locations favored by Walgreens for locating their drugstores. In most cases, Walgreens does not own these properties. Instead, they lease the properties on a long-term basis from institutional owners. What does Walgreens gain by leasing instead of owning? What do they lose?

Solution: Walgreens obtains the use of a structure that is well suited to its needs. They gain the benefit of investing their funds in its core business operations rather than committing their money in real estate. They also benefit from tax benefits associated with sale-leasebacks. Conversely, Walgreens will not benefit from the appreciation of the property and the tax depreciation benefits that come with ownership.

7. Consider the following table of annual mortgage rates and yields on 10-year Treasury securities.
   a. What is the average annual spread on mortgage rates relative to the 10-year Treasury securities?
   b. What is the correlation between annual mortgage rates and Treasury yields over the 1990-2005 period?

Solution:
   a. The average annual spread on mortgage rates relative to the 10-year Treasury securities is 1.71%
   b. The correlation between annual mortgage rates and yields over the 1990-2005 period is 96.9%.

8. List and briefly describe the typical items included in a commercial mortgage loan application package.

Solution: Loan application packages typically include the following:
   • Loan application – the specific document that serves as a request for funds.
   • Property description – a detailed description, including maps, photos, surveys, etc., of the property securing the loan.
   • Legal aspects – precise description of the property and identification of any easements or encroachments.
   • Cash flow estimates – a copy of the property’s financial statements and rent roll to future income producing ability of the property.
   • Appraisal report – a third-party appraisal of the property’s fair market value.

9. List at least six characteristics of a commercial loan application that the lender should carefully evaluate.

Solution: Characteristics of a commercial loan application that the lender should carefully evaluate include the property type, location, tenant quality, lease terms,
property management, building quality, environmental concerns, and borrower quality.

10. What is the difference in the present value of these two loan alternatives? Assume the appropriate discount rate is 6 percent.

*Solution:* The difference in NPVs is $50,000: Option “A” is more expensive.

Present value of Option A is $1,050,000: initial equity ($300,000) + upfront financing fees ($50,000) + present value of interest payments ($578,123) + present value of loan principal upon repayment ($121,877).

Present value of Option B is $1,000,000: initial equity ($250,000) + present value of interest payments ($619,417) + present value of loan principal upon repayment ($130,583).

11. You are considering the purchase of an industrial warehouse.
   a. Calculate the overall rate of return (or “cap rate”)
   b. Calculate the debt coverage ratio.
   c. What is the largest loan that you can obtain (holding the others terms constant) if the lender requires a debt service coverage ratio of at least 1.2?

*Solutions:*

a. The overall rate of return is 10.8% (NOI of 108,000/purchase price of 1,000,000)

b. The debt coverage ratio is computed below:

\[ DCR = \frac{NOI}{DS} = \frac{108,000}{42,000} = 2.57 \]

c. The maximum amount of interest that you can afford to pay based on the lender’s requirements is $90,000 (108,000/1.2). Therefore, the largest loan you can obtain is $90,000/.06, or $1,500,000.

12. Distinguish among land acquisitions loans, land development loans, and construction loans. How would you rank these three with respect to lender risk?

*Solution:* Land acquisition loans finance the purchase of raw land. Land development loans finance the installation of the onsite and offsite improvements to land that are necessary to prepare the land for construction. Construction loans are used to finance the costs associated with erecting the building(s).

13. Discuss the potential advantages of a miniperm loan from the prospective of the developer/investor, relative to the separate financing of each stage of the development.
Solution: The existence of a single lender and a single application process simplifies the financing process. Miniperm loans enable developers to proceed with construction without long-term financing. A miniperm loan is an attractive financing option if the developer expects to sell the project or refinance into a permanent loan before the term of the miniperm expires.

14. You are considering purchasing an office building for $2,500,000.
   a. What is the implied first-year overall capitalization rate?
   b. What is the expected debt coverage ratio in year 1 of operations?
   c. If the lender requires DCR to be 1.25 or greater, what is the maximum loan amount?
   d. What is the break-even ratio?

Solution:
   a. PGI $450,000
      Vacuum and collections (40,500)
      EGI 409,500
      Op Expenses and CAPX (171,990)
      NOI 237,510
      DS (138,170)
      BTCF $ 99,340

      the implied first-year overall capitalization rate is $237,510/$2,500,000 or 0.095
   b. The expected debt coverage ratio in year 1 of operations is 1.72 ($237,510/$138,170)
   c. If the lender requires DCR to be 1.25 or greater, the maximum loan amount is determined by first calculating the maximum debt service amount: $190,008 ($237,510/1.25). The maximum loan amount implied by this debt service amount is $2,578,460 (N = 300, I = 5.5/12, PMT = 190,008/12, and FV = 0)
   d. The break-even ratio is 68.9% ($171,990 + $138,170)/ ($450,000).
CHAPTER 18
SOURCES OF COMMERCIAL DEBT AND EQUITY CAPITAL

Test Problems

1. Double taxation is most likely to occur if the commercial properties are held in the form of a(n):
   c. C Corporation

2. With regard to double taxation, distributions, and the treatment of the losses, general partnerships are most like:
   c. Limited Partnerships

3. Special Allocations of income or loss are available if the form of ownership is a(n):
   c. Limited Partnerships

4. Real Estate Syndicates traditionally have been legally organized most frequently as:
   c. Limited Partnerships

5. A real estate investment trust generally:
   d. None of the above

6. Which of the following forms of ownership involve both limited and unlimited liability?
   a. limited partnerships

7. Which statement is false concerning the limited partnership of ownership?
   c. The limited partners cannot enjoy tax benefits but the general partners can.

8. Which of these lenders is most likely to provide a construction loan?
   c. Commercial Bank

9. Which of these loans is a life insurance most likely to invest in?
   c. Large office building loan (nonconstruction)

10. Which of the financial firms is most likely to invest in a large, long-term mortgage loan on a shopping center?
    c. Life insurance company
**Study Questions**

1. For what debt in a general partnership is each of the general partners liable?

   **Solution:** General partners have unlimited liability and are liable for all debts of the partnership. This includes contractual debts and debts resulting from tort actions against the partnership. General partners are also jointly and severally liable for wrongful acts committed by other partners in the course of the partnership’s business. Therefore, the personal assets of the general partners are subject to the claims of the partnership’s creditors.

2. Why are many pension funds reluctant to invest in commercial real estate?

   **Solution:** Pension funds have historically viewed real estate as too risky, difficult to manage, and illiquid. Additionally, the lack of available information for performing quantitative investment analysis has also contributed to the reluctance of pension funds to invest in real estate.

3. Discuss the role life insurance companies play in financing commercial real estate.

   **Solution:** Given the long-term nature of their liabilities, life insurance companies prefer to invest in assets on a long-term basis. They are a major source of commercial real estate capital and are heavily involved in the long-term commercial mortgage market.

4. Approximately 86 percent of investable commercial real estate (on a value-weighted basis) is owned by “noninstitutional” investors. Who are these investors?

   **Solution:** These “noninstitutional” investors include both individual investors and groups of private investors who pool their capital via several types of ownership structures, including C corporations, S corporations, general partnerships, limited partnerships, and limited liability companies, to purchase real estate assets. Pooled investments comprise the bulk of the market value of real estate held by “noninstitutional” investors. Individual investors, or investors who own property jointly with other family members, comprise a small fraction of these “noninstitutional” investors.

5. Briefly explain a commingled fund. Who are the investors in these funds and why do these investors use commingled funds for their purchases?

   **Solution:** A commingled fund is a means for pension funds that do not possess sufficient in-house real estate expertise to invest in real estate. Pension funds contribute funds to a real estate fund manager who pools, or commingles, these funds with funds from other pension funds to purchase real estate assets.

6. There are three primary considerations that affect the form in which investors choose to hold commercial real estate. List each and explain how they affect the choice of ownership form.
Solution: Management control issues, federal income taxation rules, and the avoidance of personal liability for debts and obligations affect the form in which investors choose to hold commercial real estate.

The extent to which investors wish to be active in the management decisions may dictate the ownership form selected. For example, in a limited partnership, the general partner has responsibility for management decisions and the limited partners are not active in management decisions. C Corporations, S Corporations, and limited liability companies also enable investors to avoid management responsibility.

Investors prefer ownership structures that provide limited liability. C corporations, S corporations, limited partnerships, and limited liability companies shield investors from any personal liability; liability is restricted to the amount of capital invested. General partnerships require at least one general partner who has unlimited liability for the debts of the partnership.

Federal income taxation is a critical factor in the determination of which ownership form to use in real estate investment. The income produced by properties owned by C corporations is potentially subject to double taxation because tax is assessed at both the corporate and investor level. S corporations, limited liability companies, general partnerships, and limited partnerships are pass-through entities and avoid double taxation. A limited partnership has the added benefit of permitting special allocations of cash distributions and taxable income.

7. Explain what is meant by the double taxation of income.

Solution: Double taxation refers to the taxation of income at both the entity and investor level. For example, a C corporation pays tax on its income, which reduces the amount available to be distributed to shareholders by the amount of the entity-level tax. Shareholders are then taxed on the income distributed to them in the form of dividends, resulting in the double taxation of the income generated by the corporation.

8. What are the major restrictions that a REIT must meet on an ongoing basis in order to avoid taxation at the entity level?

Solution: A REIT must have at least 100 shareholders and 50 percent or more of the REIT’s shares cannot be owned by five or fewer investors. A REIT is required to distribute at least 90 percent of its taxable income to shareholders in the form of dividends. A REIT is required to have at least 75 percent of its assets invested in real estate assets, cash, and government securities. Additionally, 75 percent of a REIT’s gross income must be derived from real estate assets.
9. Compare the tax advantages and disadvantages of holding income-producing property in the form of a REIT to the tax advantages and disadvantages of holding property in the form of a real estate limited partnership. Does either form dominate from a tax perspective?

Solution:

A REIT is a C corporation and but, unlike the standard C corporation, does not pay income tax at the entity level if it adheres to a set of conditions outlined in the Internal Revenue Code. A disadvantage of the REIT ownership form is that tax losses do not pass through to shareholders.

Real estate limited partnerships are not subject to double taxation because income tax is not assessed at the entity level. Limited partnerships may allocate tax losses to partners, but the ability of limited partners to use tax losses is potentially limited by passive activity loss restrictions.

In practice and from a tax perspective, pass through entities such as limited partnerships and limited liability companies are the dominant form of ownership structures used to invest in real estate assets. However, REITs are also able to avoid double taxation and are favored as a form of ownership by some investors.

10. Of the more than $3 trillion in outstanding commercial real estate debt, what percent is traded in public markets? What percent is traded in private markets? What institutions or entities are the long-term holders of private commercial real estate debt? What is the fastest growing source of long-term mortgage funds?

Solution: Approximately 27 percent of commercial real estate debt is traded in public markets and the remaining 73 percent is privately held by institutional and individual investors. Commercial banks, savings institutions, and life insurance companies are the long-term holders of private commercial real estate debt. Commercial mortgage-backed securities (CMBSs) are the fastest growing source of long-term mortgage funds.

11. Distinguish among equity REITs, mortgage REITs, and hybrid REITs.

Solution: Equity REITs invest in and operate commercial properties. Mortgage REITs purchase mortgage obligations (typically commercial) and thus become, effectively, real estate lenders. Hybrid REITs invest a significant percentage of their assets in both properties and mortgages.

12. Define funds from operations (FFO) and explain why this measure is often used instead of GAAP net income to quantify the income-producing ability of a real estate investment trust.
Solution: GAAP accounting includes non-cash deductions, such as depreciation and amortization of certain financial and fixed assets. Therefore, if a REIT has significant depreciable assets, which result in non-cash expense deductions for depreciation, GAAP net income may not reflect the net cash flow available to distribute to investors. Funds from operations (FFO) is an alternative earnings measure that adds back depreciation and amortization expenses to GAAP income. Additionally, FFO adjusts GAAP income for gains and losses from infrequent and unusual events. Formally, FFO is defined as:

\[
FFO = \text{Net income (GAAP)} + \text{Depreciation (real property)} + \text{Amortization of leasing expenses} + \text{Amortization of tenant improvements} - \text{Gains/losses from infrequent and unusual events}
\]

13. How have equity REITs, measured in terms of total returns, performed in recent years relative to alternative stock investments?

Solution: Over the last 5-10 years, REITS as a group have significantly outperformed both large cap and small cap stocks. During the 15-year period ending in 2005, equity REITs produced a 15.4 annualized return; the corresponding returns for the S&P 500 and the Russell 2000 were 11.5 percent and 13.0 percent, respectively. During the 20-year period ending in 2005, equity REITs provided a 12.4 annualized return, slightly higher than the 11.9 percent return produced by the S&P 500 and more than the 10.3 percent return provided by the Russell 2000. These returns are unadjusted for risk.
CHAPTER 19
Investment Decisions: Ratios

Test Questions
1. Income multipliers:
   a. are useful as a preliminary analysis tool to weed out obviously unacceptable investment opportunities.

2. The overall capitalization rate:
   a. is the reciprocal of the net income multiplier.

3. The operating expense ratio:
   c. expresses operating expenses as a percent of effective gross income.

4. The equity dividend rate:
   b. expresses before-tax cash flow as a percent of the required equity cash outlay.

5. Ratio analysis:
   d. serves as an initial evaluation of the adequacy of an investment’s cash flow.

6. Assume a retail center can be purchased for $5.5 million. The center’s NOI is expected to be $489,500. A $4,000,000 loan has been requested. The loan carries a 9.25 percent fixed contract rate, amortized monthly over 25 years with a 7-year term. What will be the property’s (annual) debt coverage ratio?
   b. 1.19

7. Which of the following is not an operating expense associated with income producing (commercial) property?
   a. debt service

Use the following information to answer questions 8-9.
You are considering purchasing an office building for $2,500,000. You expect the Potential Gross Income (PGI) in the first year to be $450,000; vacancy and collection losses to be 9 percent of PGI; and operating expenses to be 42 percent of Effective Gross Income (EGI).

8. What is the implied first year overall capitalization rate?
   a. 9.5 percent

9. What is the effective gross income multiplier?
   b. 6.11
10. Given the following information, what is the required equity down payment?
   - Acquisition price: $800,000
   - Loan-to-value ratio: 75%
   - Up-front financing cost: 3%
   c. $218,000

**Study Questions**

Use the following information to answer questions 1 – 3:
You are considering the purchase of an office building for $1.5 million today. Your expectations include the following: first-year gross potential income of $340,000; vacancy and collection losses equal to 15 percent of gross potential income; operating expenses equal to 40 percent of effective gross income. Capital expenditures equal 5 percent of EGI. You expect to sell the property five years after it is purchased. You estimate that the market value of the property will increase four percent a year after it is purchased and you expect to incur selling expenses equal to 6 percent of the estimated future selling price.

1. What is estimated effective gross income (EGI) for the first year of operations?

   **Solution:**
   
<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential gross income (PGI)</td>
<td>$340,000</td>
</tr>
<tr>
<td>less: V&amp;C allowance (at 15% of PGI)</td>
<td>51,000</td>
</tr>
<tr>
<td>Effective gross income (EGI)</td>
<td>$289,000</td>
</tr>
</tbody>
</table>

2. What is estimated net operating income (NOI) for the first year of operations?

   **Solution:**
   
<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective gross income (EGI)</td>
<td>$289,000</td>
</tr>
<tr>
<td>less: Operating expenses (OE)</td>
<td>(115,600)</td>
</tr>
<tr>
<td>less: Capital expenditures (CAPX)</td>
<td>(14,450)</td>
</tr>
<tr>
<td>Net operating income (NOI)</td>
<td>$158,950</td>
</tr>
</tbody>
</table>

3. What is the estimated overall cap rate ($R_o$) using NOI for the first year of operations?

   **Solution:** The overall cap rate is 10.6 percent ($158,950 / $1,500,000)

4. An investment opportunity having a market price of $100,000 is available. You could obtain a $75,000, 25-year mortgage loan requiring equal monthly payments with interest at 9.5 percent. The following operating results are expected during the first year.
<table>
<thead>
<tr>
<th>Effective gross income</th>
<th>$25,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less operating expenses</td>
<td>$13,000</td>
</tr>
<tr>
<td>Net operating income</td>
<td>$12,000</td>
</tr>
</tbody>
</table>

For the first year only, determine the:

a. Gross income multiplier

*Solution:* Market price / Effective gross income = $100,000 / $25,000 = 4

b. Operating expense ratio

*Solution:* Operating expenses / Effective gross income = $13,000 / $25,000 = 52 percent

c. Debt coverage ratio

*Solution:* NOI / Annual debt service = $12,000 / $7,863 = 1.5

d. Overall capitalization rate

*Solution:* NOI / Market price = $12,000 / $100,000 = 12 percent

e. Equity dividend rate

*Solution:* Before-tax cash flow / Equity = $4,137 / $25,000 = 16.55 percent

5. You are considering the purchase of a quadruplex apartment. Effective gross income (EGI) during the first year of operations is expected to be $33,600 ($700 per month per unit). First-year operating expenses are expected to be $13,440 (at 40 percent of EGI). Ignore capital expenditures. The purchase price of the quadruplex is $200,000. The acquisition will be financed with $60,000 in equity and a $140,000 standard fixed-rate mortgage. The interest rate on the debt financing is eight percent and the loan term is 30 years. Assume, for simplicity, that payments will be made annually and that there are no up-front financing costs.

   a. What is the overall capitalization rate?

*Solution:* 

\[
\text{NOI} = \text{EGI} - \text{operating expenses} \\
= $33,600 - $13,440 \\
= $20,160
\]

\[
\text{NOI} / \text{Market price} = $20,160 / $200,000 = 10.08 \text{ percent}
\]

b. What is the effective gross income multiplier?
Solution: Market price / Effective gross income = $200,000 / $33,600 = 5.95

c. What is the equity dividend rate (the before-tax return on equity)?

Solution:

Debt service = $12,436, as calculated below

\[
\begin{array}{c|c|c|c|c|c}
N & 1/YR & PV & PMT & FV \\
30 & 8 & $140,000 & ? & 0 \\
\end{array}
\]

Before-tax cash flow = NOI - Debt service
= $20,160 - $12,436
= $7,724

Equity dividend rate = Before-tax cash flow / equity invested
= $7,724 / $60,000
= 12.87 percent

d. What is the debt service coverage ratio?

Solution: DCR = NOI / debt service
= $20,160 / $12,436
= 1.62

e. Assume the lender requires a minimum debt coverage ratio of 1.2. What is the largest loan that you could obtain if you decide to borrow more than $140,000?

Solution: Debt service must be such that the following relationship holds:

\[
\frac{NOI}{Debt\ Service} \geq 1.2
\]

But, debt service is equal to the loan amount times the mortgage constant (contract interest rate plus principal amortization). Thus, we can rewrite the above expression as

\[
\frac{NOI}{loan\ amount \times mortgage\ constant} \geq 1.2
\]

Rearranging,

\[
\frac{NOI}{1.2} = loan\ amount \times mortgage\ constant
\]

or,
\[
\frac{NOI}{1.2 \times \text{mortgage constant}} = \text{loan amount}
\]

For our problem,

\[
\frac{20,160}{1.2 \times 0.0888} = \text{loan amount}
\]

The mortgage constant is the stated interest rate plus the first-year principal payment divided by the loan amount \((1,236/140,000 = .0088)\), or .0888.

\[
\frac{20,160}{0.1066} = \text{loan amount}
\]

\$189,130 = \text{loan amount}

6. Why do Class B properties sell at higher going-in cap rates than Class A properties?

*Solution:* Relative to class A properties, class B properties are more risky and/or are expected to produce smaller rental increases over time. Both effects reduce the amount a rational investor is willing to pay today per dollar of current income. When values/prices fall relative to current net rental income, cap rates increase.

7. Why might a commercial real estate investor borrow to help finance an investment even if she could afford to pay 100 percent cash?

*Solution:* Borrowing—i.e., the use of “other people’s money”—is also referred to as the use of financial leverage. If the overall return on the property exceeds the cost of debt, the use of leverage can significantly increase the rate of return investors earn on their invested equity. This expected *magnification of return often* induces investors to partially debt finance even if they have the accumulated wealth to pay all cash for the property.

8. You are considering purchasing an office building for \$2,500,000. You expect the potential gross income (PGI) in the first year to be \$450,000; vacancy and collection losses to be 9 percent of PGI; and operating expenses to be 42 percent of effective gross income (EGI). What is the estimated Net Operating Income? Using the selling price, what is the implied first year overall capitalization rate? What is the (effective) gross income multiplier?
<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential gross income (PGI)</td>
<td>$450,000</td>
</tr>
<tr>
<td>- Vacancy &amp; collection loss (VC)</td>
<td>40,500</td>
</tr>
<tr>
<td>= Effective gross income (EGI)</td>
<td>409,500</td>
</tr>
<tr>
<td>- Operating expenses (OE)</td>
<td>171,990</td>
</tr>
<tr>
<td>= Net operating income (NOI)</td>
<td>237,510</td>
</tr>
</tbody>
</table>

What is the overall capitalization rate?

\[ R_0 = \frac{NOI}{Acquisition\ Price} = \frac{237,510}{2,500,000} = 0.095 \text{ or } 9.5\% \]

What is the effective gross income multiplier?

\[ GIM = \frac{Acquisition\ Price}{Effective\ Gross\ Income} = \frac{2,500,000}{409,500} = 6.10 \]

9. What is the primary thing that distinguishes an operating expense from a capital expenditure?

Solution: An operating expense does not fundamentally alter the market value or remaining economic life of the asset; rather operating expenses simply keep the property operating and competitive in its local market. In contrast, a capital expenditure is defined as an expense that does increase the market value and/or remaining economic life of the asset.

10. Explain why income property cash flow is not the same as taxable income.

Solution: For several reasons, the actual net cash flow generated by a rental property investment is different than the amount of income the owner must report for federal income tax purposes. First and foremost, a deduction for depreciation is allowed in the calculation of taxable income from annual operations; however, the owner does not “write a check” for depreciation on an annual basis. This reduces taxable income relative to the actual cash flow. The same is true for amortized financing expenses. Conversely, the owner often does make mortgage payments that include both interest and principal amortization. However, only the interest portion of the mortgage payment is tax deductible. The principal portion is, therefore, a cash outflow that is not tax deductible.

11. What is the basic shortcoming of most ratios and rules of thumb used in commercial real estate investment decision making?

Solution: The major weakness of most ratios and rules of thumb is that they ignore cash inflows and outflows that are likely to occur beyond the first year of operations. Also, there are no clear decisions rules associated with rules of thumb. For example, how much higher does the going-in cap rate on a potential
acquisition have to be relative to the cap rate on similar properties before the investor can conclude that acquiring the property will increase wealth?
CHAPTER 20
Investment Decisions: NPV and IRR

Test Questions

1. A real estate investment is available at an initial cash outlay of $10,000, and is expected to yield cash flows of $3,343.81 per year for five years. The internal rate of return (IRR) is approximately:
   b. 20 percent.

2. The net present value of an acquisition is equal to:
   b. the present value of expected future cash flows, less the initial cash outlay.

3. Present value:
   b. is the value now of all net benefits that are expected to be received in the future.

4. The internal rate of return equation incorporates:
   d. initial cash outflow and inflow, and future cash outflow and inflow.

5. The purchase price that will yield an investor the lowest acceptable rate of return:
   a. is the property’s investment value to that investor.

6. What term best describes the maximum price a buyer is willing to pay for a property?
   a. investment value

7. An income-producing property is priced at $600,000 and is expected to generate the following after-tax cash flows: Year 1: $42,000; Year 2: $44,000; Year 3: $45,000; Year 4: $50,000; and Year 5: $650,000. Would an investor with a required after-tax rate of return of 15 percent be wise to invest at the current price?
   b. No, the NPV is -$148,867.

8. As a general rule, using financial leverage:
   b. increases risk to the equity investor.

9. What is the IRR, assuming an industrial building can be purchased for $250,000 and is expected to yield cash flows of $18,000 for each of the next five years and be sold at the end of the fifth year for $280,000?
   c. 9.20 percent
10. Given the following information, what is the required equity investment due at closing?
   • Acquisition price: $800,000
   • Loan-to-value ratio: 75%
   • Financing cost: 3%
   c. $218,000

Study Questions

1. List three important ways in which DCF valuation models differ from direct capitalization models.

   Solution: Direct capitalization models require an estimate of stabilized income for one year. DCF models require estimates of net cash flows over the entire expected holding period. In addition, the cash flow forecast must include the net cash flow expected to be produced by the sale of the property at the end of the expected holding period. Finally, the appraiser must select the appropriate yield (required IRR) at which to discount all future cash flows or to use as the hurdle rate in an IRR analysis.

2. Why might a commercial real estate investor borrow to help finance an investment even if she could afford to pay 100 percent cash?

   Solution: Borrowing—i.e., the use of “other people’s money”—is also referred to as the use of financial leverage. If the overall return on the property exceeds the cost of debt, the use of leverage can significantly increase the rate of return investors earn on their invested equity. This expected magnification of return often induces investors to partially debt finance even if they have the accumulated wealth to pay all cash for the property. Other potential benefits of leverage include: the ability to break through equity capital constraint in order to acquire more + NPV projects; the ability to apply the owner/operator’s comparative advantage in acquisition and management to more projects; and increased portfolio diversification.

3. Using the “CF” key of your financial calculator determine the IRR of the following series of annual cash flows: CF0 = -$31,400; CF1 = $3,292; CF2 = $3,567; CF3 = $3,850; CF4 = $4,141; and CF5 = $50,659.

   Solution: IRR = 18.51%

4. A retail shopping center is purchased for $2.1 million. During the next four years, the property appreciates at 4 percent per year. At the time of purchase, the property is financed with a 75 percent loan-to-value ratio for 30 years at 8 percent (annual) with monthly amortization. At the end of year 4, the property is sold with 8 percent selling expenses. What is the before-tax equity reversion?
Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan amount = 0.75 x (2,100,000)</td>
<td>$1,575,000</td>
</tr>
<tr>
<td>Monthly payments</td>
<td>11,556.79</td>
</tr>
<tr>
<td>Remaining mtg. balance</td>
<td>1,515,450</td>
</tr>
<tr>
<td>Selling price [2,100,000 x (1.04)^4]</td>
<td>2,456,703</td>
</tr>
<tr>
<td>less: Selling expenses (at 8% of SP)</td>
<td>196,536</td>
</tr>
<tr>
<td>Net selling price</td>
<td>2,260,167</td>
</tr>
<tr>
<td>less: Unpaid mtg. balance</td>
<td>1,515,450</td>
</tr>
<tr>
<td>Before-tax equity reversion</td>
<td>$ 744,717</td>
</tr>
</tbody>
</table>

5. State, in no more than one sentence, the condition for favorable financial leverage in the calculation of NPV.

Solution: Increasing the use of leverage will increase the calculated NPV if the discount rate exceeds the effective cost of mortgage debt.

6. State, in no more than one sentence, the condition for favorable financial leverage in the calculation of the IRR.

Solution: Increasing the use of leverage will increase the calculated IRR if the unlevered IRR exceeds the effective cost of mortgage debt.

7. An office building is purchased with the following projected cash flows:
   • NOI is expected to be $130,000 in year 1 with 5 percent annual increases.
   • The purchase price of the property is $720,000.
   • 100% equity financing is used to purchase the property
   • The property is sold at the end of year 4 for $860,000 with selling costs of 4 percent.
   • The required unlevered rate of return is 14 percent.

a. Calculate the unlevered internal rate of return (IRR).
b. Calculate the unlevered net present value (NPV).

Solution:

<table>
<thead>
<tr>
<th>Year</th>
<th>Purchase Price</th>
<th>Net Operating Income</th>
<th>Net Sale Proceeds</th>
<th>Total Cash Flow</th>
<th>Present Value at 14%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>($720,000)</td>
<td></td>
<td>($720,000)</td>
<td>($720,000)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>130,000</td>
<td>130,000</td>
<td>130,000</td>
<td>114,035</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>136,500</td>
<td>136,500</td>
<td>136,500</td>
<td>105,032</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>143,325</td>
<td>143,325</td>
<td>143,325</td>
<td>96,740</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>150,491</td>
<td>825,600</td>
<td>$976,091</td>
<td>$577,924</td>
<td></td>
</tr>
</tbody>
</table>
8. With a purchase price of $350,000, a warehouse provides for an initial before-tax cash flow of $30,000, which grows by 6 percent per year. If the before-tax equity reversion after four years equals $90,000, and an initial equity investment of $175,000 is required, what is the IRR on the project? If the required going-in levered rate of return on the project is 10 percent, should the project be undertaken?

Solution:

<table>
<thead>
<tr>
<th>Year</th>
<th>Purchase Price</th>
<th>Before-Tax Cash Flow</th>
<th>Before-Tax Equity Reversion</th>
<th>Total Cash Flow</th>
<th>Present Value at 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>($175,000)</td>
<td></td>
<td></td>
<td>($175,000)</td>
<td>($175,000)</td>
</tr>
<tr>
<td>1</td>
<td>30,000</td>
<td>30,000</td>
<td></td>
<td>30,000</td>
<td>27,272</td>
</tr>
<tr>
<td>2</td>
<td>31,800</td>
<td>31,800</td>
<td></td>
<td>31,800</td>
<td>26,281</td>
</tr>
<tr>
<td>3</td>
<td>33,708</td>
<td>33,708</td>
<td></td>
<td>33,708</td>
<td>25,325</td>
</tr>
<tr>
<td>4</td>
<td>35,730</td>
<td>90,000</td>
<td></td>
<td>$125,730</td>
<td>$85,875</td>
</tr>
</tbody>
</table>

The IRR is 7.84 percent. Based on a going-in levered rate of return on the project of 10 percent, the NPV equals ($10,246) and the project should not be undertaken.

9. You are considering the acquisition of an office building. The purchase price is $775,000. Seventy-five percent of the purchase price can be borrowed with a 30-year, 7.5 percent mortgage. Payments will be made annually. Up-front financing costs will total three percent of the loan amount. The expected before-tax cash flows from operations—assuming a 5-year holding period—are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>BTCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$48,492</td>
</tr>
<tr>
<td>2</td>
<td>53,768</td>
</tr>
<tr>
<td>3</td>
<td>59,282</td>
</tr>
<tr>
<td>4</td>
<td>65,043</td>
</tr>
<tr>
<td>5</td>
<td>71,058</td>
</tr>
</tbody>
</table>

The before-tax cash flow from the sale of the property is expected to be $295,050. What is the net present value of this investment, assuming a 12 percent required rate of return on levered cash flows? What is the levered internal rate of return?
Solution: As solved below, the NPV is $(11,166) and the IRR is 10.75 percent

<table>
<thead>
<tr>
<th>Year</th>
<th>Equity Investment</th>
<th>NOI</th>
<th>Debt Service</th>
<th>BTER</th>
<th>Total Cash Flow</th>
<th>Present Value at 12%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>($211,188)</td>
<td>($211,188)</td>
<td>($211,188)</td>
<td>$211,188</td>
<td>($211,188)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$48,492</td>
<td>$49,215</td>
<td>(723)</td>
<td>4,553</td>
<td>3,630</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>53,768</td>
<td>49,215</td>
<td>4,553</td>
<td>3,630</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>59,282</td>
<td>49,215</td>
<td>10,067</td>
<td>7,165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>65,043</td>
<td>49,215</td>
<td>15,828</td>
<td>10,059</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>$71,058</td>
<td>$49,215</td>
<td>$295,050</td>
<td>$316,893</td>
<td>$179,814</td>
<td></td>
</tr>
</tbody>
</table>

10. You are considering the purchase of an apartment complex. The following assumptions are made:
   • The purchase price is $1,000,000.
   • Potential gross income (PGI) for the first year of operations is projected to be $171,000.
   • PGI is expected to increase at 4 percent per year.
   • No vacancies are expected.
   • Operating expenses are estimated at 35 percent of effective gross income. Ignore capital expenditures.
   • The market value of the investment is expected to increase 4 percent per year.
   • Selling expenses will be 4 percent.
   • The holding period is 4 years.
   • The appropriate unlevered rate of return to discount projected NOIs and the projected NSP is 12 percent.
   • The required levered rate of return is 14 percent.
   • 70 percent of the acquisition price can be borrowed with a 30-year, monthly payment mortgage.
   • The annual interest rate on the mortgage will be 8.0 percent.
   • Financing costs will equal 2 percent of the loan amount.
   • There are no prepayment penalties.

a. Calculate net operating income (NOI) for each of the four years.

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGI</td>
<td>$171,000</td>
<td>$177,840</td>
<td>$184,954</td>
<td>$192,352</td>
</tr>
<tr>
<td>Less: V&amp;C</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EGI</td>
<td>171,000</td>
<td>177,840</td>
<td>184,954</td>
<td>192,352</td>
</tr>
<tr>
<td>Less: OE</td>
<td>59,850</td>
<td>62,244</td>
<td>64,734</td>
<td>67,323</td>
</tr>
<tr>
<td>NOI</td>
<td>$111,150</td>
<td>$115,596</td>
<td>$120,220</td>
<td>$125,029</td>
</tr>
</tbody>
</table>
b. Calculate the net sale proceeds from the sale of the property.

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price [1,000,000 \times (1.04)^4]</td>
<td>$1,169,859</td>
</tr>
<tr>
<td>less: Selling expenses (at 4% of SP)</td>
<td>$46,794</td>
</tr>
<tr>
<td>Net Selling price</td>
<td>$1,123,065</td>
</tr>
</tbody>
</table>

c. Calculate the net present value of this investment, assuming no mortgage debt. Should you purchase? Why?

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cash Flow</th>
<th>Present Value at 12%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Outflow Yr. 0</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
</tr>
<tr>
<td>NOI Yr.1</td>
<td>111,150</td>
<td>99,241</td>
</tr>
<tr>
<td>NOI Yr.2</td>
<td>115,596</td>
<td>92,152</td>
</tr>
<tr>
<td>NOI Yr.3</td>
<td>120,220</td>
<td>85,570</td>
</tr>
<tr>
<td>NOI Yr.4</td>
<td>125,029</td>
<td>79,458</td>
</tr>
<tr>
<td>Reversion Yr. 4</td>
<td>1,123,065</td>
<td>713,727</td>
</tr>
<tr>
<td><strong>Net Present Value</strong></td>
<td></td>
<td><strong>$70,150</strong></td>
</tr>
</tbody>
</table>

Yes, purchase the property because it is a positive NPV project.

d. Calculate the internal rate of return of this investment, assuming no debt. Should you purchase? Why?

Solution: IRR = 14.22 percent. Purchase because unlevered required rate of return is 12 percent

e. Calculate the monthly mortgage payment. What is the total per year?

Solution: Monthly payment = $5,136.35 as calculated below:

Annual payment = monthly payment x 12 = $61,636

f. Calculate the loan balance at the end of years 1, 2, 3, and 4. (Note: the unpaid mortgage balance at any time is equal to the present value of the remaining payments, discounted at the contract rate of interest.)

Solution:

Unpaid mortgage balance in year 1 = $694,152
Unpaid mortgage balance in year 2 = $687,820
Unpaid mortgage balance in year 3 = $680,961
Unpaid mortgage balance in year 4 = $673,533
g. Calculate the amount of principal reduction achieved during each of the four years.

Solution:
Principal reduction in year 1 = $700,000 - $694,152 = $5,848
Principal reduction in year 2 = $694,152 - $687,820 = $6,332
Principal reduction in year 3 = $687,820 - $680,961 = $6,859
Principal reduction in year 4 = $680,961 - $673,533 = $7,428

h. Calculate the total interest paid during each of the four years. (Note: Remember that debt service equals principal plus interest.)

Solution:
Interest paid in year 1 = $61,636 - $5,848 = $55,788
Interest paid in year 2 = $61,636 - $6,332 = $55,304
Interest paid in year 3 = $61,636 - $6,859 = $54,777
Interest paid in year 4 = $61,636 - $7,428 = $54,208

i. Calculate the levered required initial equity investment.

Solution:
Loan amount (0.70 x $1,000,000) = $700,000
Up-front financing costs (0.02 x $700,000) = $14,000
Equity investment = $1,000,000 - $700,000 + $14,000 = $314,000

j. Calculate the before-tax cash flow (BTCF) for each of the four years.

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOI</td>
<td>$111,150</td>
<td>$115,596</td>
<td>$120,220</td>
<td>$125,029</td>
</tr>
<tr>
<td>less: Debt Service</td>
<td>61,636</td>
<td>61,636</td>
<td>61,636</td>
<td>61,636</td>
</tr>
<tr>
<td>BTCF</td>
<td>$49,514</td>
<td>$53,960</td>
<td>$58,584</td>
<td>$63,393</td>
</tr>
</tbody>
</table>

k. Calculate the before-tax equity reversion (BTER) from the sale of the property.

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net selling price</td>
<td>$1,123,065</td>
</tr>
<tr>
<td>less: Remaining mortgage balance in year 4</td>
<td>673,533</td>
</tr>
<tr>
<td>Before-tax equity reversion</td>
<td>$449,532</td>
</tr>
</tbody>
</table>
l. Calculate the levered net present value of this investment. Should you purchase? Why?

Solution:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cash Flow</th>
<th>Present Value at 14%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTCF Yr.1</td>
<td>$49,514</td>
<td>$43,433</td>
</tr>
<tr>
<td>BTCF Yr.2</td>
<td>53,960</td>
<td>41,520</td>
</tr>
<tr>
<td>BTCF Yr.3</td>
<td>58,584</td>
<td>39,543</td>
</tr>
<tr>
<td>BTCF Yr.4</td>
<td>63,392</td>
<td>37,534</td>
</tr>
<tr>
<td>Reversion Yr.4</td>
<td>449,532</td>
<td>266,159</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$428,189</strong></td>
</tr>
</tbody>
</table>

NPV = Present value of the cash flows less the equity investment: $428,189 - $314,000 = $114,189.

Decision: Purchase the property because the NPV > 0; wealth will increase by $114,189.

m. Calculate the levered internal rate of return of this investment (assuming no debt and no taxes). Should you purchase? Why?

Solution: Levered IRR = 25.02 percent; Decision: Purchase the property because IRR > 14 percent, the required return.

n. Calculate, for the first year of operations, the: (1) overall (cap) rate of return, (2) equity dividend rate, (3) gross income multiplier, (4) debt coverage ratio.

Solution:

(1) Overall cap rate = NOI / Market price = $111,150 / $1,000,000 = 11.12%

(2) Equity dividend rate = BTCF / equity = $49,514 / $314,000 = 15.8 percent

(3) Gross income multiplier = Market price / EGI = $1,000,000 / $171,000 = 5.85

(4) Debt coverage ratio = NOI / Debt service = $111,150 / $61,636 = 1.8

11. The expected before-tax IRR on a potential real estate investment is 14 percent. The expected after-tax IRR is 10.5 percent. What is the effective tax rate on this investment?

Solution: The effective tax rate is (1-(10.5/14)) = 0.25 or 25 percent.
CHAPTER 21
INCOME TAXATION AND VALUE

Test Problems

1. Taxable income from the rental of actively managed depreciable real estate is classified as:
   b. Passive income.

2. Under current federal income tax law, what is the shortest cost recovery period available to investors purchasing residential rental property?
   e. None of the above.

3. If an investor is a “dealer” with respect to certain real estate, then that real estate is classified (by the IRS) as being held:
   b. For sale to others

4. When a property is sold for less than its remaining book value, its depreciation (wear and tear) was:
   b. Underestimated.

5. For tax purposes, a substantial real property improvement made after the initial purchase is:
   a. Treated like a separate building.

6. What percent of the rental income from residential property must be derived from the leasing of units occupied by tenants as housing?
   c. 80 percent

7. In 2007, you purchase a small office building for $450,000, which you financed with a $337,500, 25-year, fixed-rate mortgage. Up-front financing costs total $6,750. How much of this expense could be written off against ordinary income in 2007?
   c. $270

8. If the investor is in the 33% income tax bracket, how much will a tax credit of $2,000 save the investor in taxes?
   a. $2,000.00

9. Which of the following best describes the taxation of gain and losses from the sale of Section 1231 assets?
   d. Net gains are taxed as capital gains; net losses are taxed as ordinary income.
10. Which of the following statements is false?
   d. Net passive losses can be used to offset dividend income from a REIT stock.

Study Questions

1. Why do investors generally care whether the IRS classifies cash expenditures as operating expenses rather than capital expenditures?

   Solution: Operating expenses are generally deductible for income tax purposes in the year they are paid. Capital expenditures are added to the tax basis of a property, treated like a separate building, and expensed through annual depreciation deductions. Tax benefits, like other cash flow benefits, have higher present values when they are received sooner rather than later.

2. How are the discount points associated with financing an income property handled for tax purposes?

   Solution: All up-front financing costs are amortized over the life of the loan used to finance the purchase. If the loan is prepaid before the end of the loan term, the remaining up-front financing costs are fully deductible in the year in which the loan obligation is extinguished.

3. What will be the taxes due on sale? Assume 6% selling costs, 33% percent ordinary income tax rate, a 15 percent capital gains tax rate, and a 25 percent recapture rate.

   Solution:
   Annual depreciation deduction = $750,000 x (1/27.5) = $27,272.73
   Total depreciation over 5 years = 5 x $27,272.73 = 136,364

   | Sale Price                  | $1,270,000 |
   | Less: Selling Expenses @ 6% | (76,200)   |
   | Net Sale Proceeds           | 1,193,800  |
   | Less: Adjusted Basis (1,000,000 - 136,364, or five years of 27,272.73 in annual depreciation) | 863,636 |
   | Taxable Gain                | 330,164    |
   | Less: Depreciation Recapture| (136,364)  |
   | Capital Gain                | 193,800    |
   | Capital Gain tax @ 15%      | 29,070     |
   | Add: Depreciation Recapture tax (25% x 136,364) | 34,091 |
   | Taxes Due on Sale           | $63,161    |
4. What will be the after-tax equity reversion (cash flow) from the sale?

Solution:

<table>
<thead>
<tr>
<th>Net Sale Proceeds</th>
<th>$1,193,800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less: Remaining loan balance*</td>
<td>(666,648)</td>
</tr>
<tr>
<td>Before-Tax Equity Reversion</td>
<td>527,152</td>
</tr>
<tr>
<td>Less: Taxes Due on Sale</td>
<td>(63,161)</td>
</tr>
<tr>
<td>After-Tax Equity Reversion</td>
<td>$463,991</td>
</tr>
</tbody>
</table>

*(N=25, I=12, PV=-700,000, and FV=0) results in a yearly payment of $89,249.98. The remaining loan balance at the end of year 5 is $666,648 (N=20, I=12, PV=?, and PMT = 89,249.98).

5. Over the entire five-year holding period, how much were your taxes from rental operations reduced by the annual depreciation deductions?

Solution: The amount of taxes saved from the annual tax depreciation is the total depreciation claimed of 136,364 times 33% (the ordinary income tax rate), or $45,000.

6. What are the four classifications of real estate holdings for tax purposes? Which classifications of property can be depreciated for tax purposes?

Solution: The four classes of real estate holdings for tax purposes are (1) real estate held as a personal residence; (2) real estate held for sale to others, or dealer property; (3) real estate held for use in a trade or business activity, or trade or business property; and (4) real estate held for investment, or investment property. Generally, only property used in a trade or business or for the production of income, such as rental real estate, can be depreciated.

7. What is your annual depreciation deduction?

Solution: The annual depreciation deduction is $3,571.43 (Adjusted basis of $100,000/28 years)

8. If you never sold the property, what would be the present value of the annual tax savings from depreciation?

Solution: The present value of the annual tax savings from depreciation is $9,306.57 (N=28, I=10, PMT=3,571.43 x 0.28, and FV=0)

9. If you sold the property at the end of five years, what would be the present value of the depreciation deductions, net of all taxes due on sale?
Solution:

After-tax value of annual depreciation deduction = $3,571.43 x 0.28 = $1,000

Present value of annual deduction = $3,791 (N=5, I/YR=10, PV=?, PMT=1,000, and FV=0)

Total depreciation over 5 years = 5 x $3,571.43 = $17,857

Depreciation recapture tax at end of year 5 = $17,857 x 0.25 = $4,464

Present value of depreciation recapture tax = $2,772 (N=5, I/YR=10, PV=?, PMT=0, and FV=4,464)

The NPV of the depreciation deductions over 5-year holding period is $1,019 ($3,791 - $2,772).

10. Black Acres Apartment, Inc needs to compute taxable income (TI) for the preceding year and wants your assistance. The effective gross income (EGI) was $52,000; operating expenses were $19,000; $2,000 was put into a fund for future replacement of stoves and refrigerators; debt service was $26,662, of which $25,126 was interest; and the depreciation deduction was $17,000. Compute the taxable income from operations:

Solution:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Gross Income</td>
<td>$52,000</td>
</tr>
<tr>
<td>Less: Operating Expenses</td>
<td>(19,000)</td>
</tr>
<tr>
<td>Less: Capital Expenditures</td>
<td>(2,000)</td>
</tr>
<tr>
<td>Net Operating Income</td>
<td>31,000</td>
</tr>
<tr>
<td>Add: CAPX</td>
<td>2,000</td>
</tr>
<tr>
<td>Less: Interest on Debt Service</td>
<td>(25,126)</td>
</tr>
<tr>
<td>Less: Tax Depreciation</td>
<td>(17,000)</td>
</tr>
<tr>
<td>Taxable Income (Loss)</td>
<td>$(9,126)</td>
</tr>
</tbody>
</table>

11. You are considering the purchase of a small apartment complex.

a. Calculate the mortgage payment, the interest deduction, the depreciation deduction, and the amortized financing costs for the first year of operations.
b. What will be your net equity investment at “time zero”?
c. Estimate the after-tax cash flows from the first year of operations.

Solution:

a. Annual mortgage payment: $65,575 (N=25, I=8, PV=−700,000, and FV=0)
   Interest Deduction in year 1 = 0.08 x $700,000 = $56,000
   Depreciation: $27,272.73 (Depreciable Basis of $750,000/27.5)
   Amortization of financing costs: $1,000 ($25,000/25)
b. The net equity investment at time zero is $325,000 (Down payment of $300,000 plus upfront financing of $25,000).
c. The after-tax cash flow is calculated below:
**Tax Calculations**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Potential Income</td>
<td>$175,000</td>
</tr>
<tr>
<td>Less: Vacancy and Collection Losses</td>
<td>(21,000)</td>
</tr>
<tr>
<td>Effective Gross Income</td>
<td>154,000</td>
</tr>
<tr>
<td>Less: Operating Expenses</td>
<td>(36,000)</td>
</tr>
<tr>
<td>Less: Capital Expenditures</td>
<td>(2,000)</td>
</tr>
<tr>
<td>Net Operating Income</td>
<td>116,000</td>
</tr>
<tr>
<td>Add: Capital Expenditures</td>
<td>2,000</td>
</tr>
<tr>
<td>Less: Interest</td>
<td>(56,000)</td>
</tr>
<tr>
<td>Less: Depreciation</td>
<td>(27,273)</td>
</tr>
<tr>
<td>Less: Amortization of Financing Costs</td>
<td>(1,000)</td>
</tr>
<tr>
<td>Taxable Income</td>
<td>33,727</td>
</tr>
<tr>
<td>x 35%</td>
<td></td>
</tr>
<tr>
<td>Tax Liability</td>
<td>11,805</td>
</tr>
</tbody>
</table>

**Cash Calculations**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Operating Income</td>
<td>116,000</td>
</tr>
<tr>
<td>Less: Debt Service</td>
<td>(65,575)</td>
</tr>
<tr>
<td>Before Tax Cash Flow</td>
<td>50,425</td>
</tr>
<tr>
<td>Less: Tax Liability</td>
<td>(11,805)</td>
</tr>
<tr>
<td>After-tax Cash flow</td>
<td>38,620</td>
</tr>
</tbody>
</table>

12. Compute the after-tax cash flow from the sale of the following nonresidential property.
   a. Compute the annual depreciation expense.
   b. Compute the adjusted basis at the time of sale (after two years).
   c. Compute the tax liability from sale.
   d. Compute the after-tax cash flow (equity reversion) from sale.

**Solution:**

a. Annual depreciation expense: $9,807.69 (Depreciable Basis = 0.85 x $450,000 = $382,500; Annual depreciation expense = $382,500 x (1/39)

b. Total depreciation over 2-year holding period = 2 x $9,807.69 = $19,615
   Adjusted basis at the time of sale: $460,385 ($450,000 acquisition price, plus $30,000 in subsequent capital expenditures, minus $19,615 of depreciation)

c. Computation of Tax Liability:

The book says the market value of the property increased to $472,500 over the two year holding period and that selling costs at that time will be 6 percent of the sale price/market value. Assume instead that the market value has increased to $510,000 and that selling expenses will be 3 percent.
<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling Price</td>
<td>$510,000</td>
</tr>
<tr>
<td>Less: Selling Expenses</td>
<td>(15,300)</td>
</tr>
<tr>
<td>Net Sale Proceeds</td>
<td>494,700</td>
</tr>
<tr>
<td>Less: Adjusted Basis</td>
<td>460,385</td>
</tr>
<tr>
<td>Taxable Gain</td>
<td>34,315</td>
</tr>
<tr>
<td>Less: Depreciation Recapture</td>
<td>(19,615)</td>
</tr>
<tr>
<td>Capital Gain</td>
<td>14,700</td>
</tr>
<tr>
<td>Capital Gain Tax @ 15%</td>
<td>2,205</td>
</tr>
<tr>
<td>Add: Depreciation Recapture tax @ 25%</td>
<td>4,904</td>
</tr>
<tr>
<td>Total Taxes</td>
<td>$7,109</td>
</tr>
</tbody>
</table>

**d. After-tax cash flow:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sale Proceeds</td>
<td>$494,700</td>
</tr>
<tr>
<td>Less: Remaining Mortgage Balance</td>
<td>(354,276)</td>
</tr>
<tr>
<td>Before-Tax Equity Reversion</td>
<td>140,424</td>
</tr>
<tr>
<td>Less: Taxes Due on Sale</td>
<td>(7,109)</td>
</tr>
<tr>
<td>After-tax Equity Reversion</td>
<td>$133,315</td>
</tr>
</tbody>
</table>

13. A real estate investor is considering the purchase of an office building. The following assumptions are made:

Answer the following questions for the first year of operations:

- **e.** What is the equity (cash) down payment required at “time zero”?
- **f.** What is the annual tax depreciation deduction?
- **g.** What is the amount of the debt service?
- **h.** What is the estimated net operating income?

**Solution:**

- **a.** The equity (cash) down payment required at “time zero” is $193,750 (0.25 x the purchase price of $775,000)
- **b.** The annual tax depreciation deduction is $14,904 (Depreciable basis of $581,250 with straight-line depreciation over 39 years)
- **c.** The amount of the debt service is 4,682.51 per month, or 56,190 per year. The interest paid in year one is $43,152.
- **d.** The estimated net operating income is $148,950.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Gross Income (10 x 34,000)</td>
<td>$340,000</td>
</tr>
<tr>
<td>Less: Vacancy and Collection Losses</td>
<td>(51,000)</td>
</tr>
<tr>
<td>Effective Gross Income</td>
<td>289,000</td>
</tr>
<tr>
<td>Less: Operating Expenses</td>
<td>(130,050)</td>
</tr>
<tr>
<td>Less: Capital Expenditure</td>
<td>(10,000)</td>
</tr>
<tr>
<td>Net Operating Income</td>
<td>$148,950</td>
</tr>
</tbody>
</table>
14. Compute the after-tax cash flows and after-tax equity reversion for the holding period.

*Solution:*

<table>
<thead>
<tr>
<th>Year</th>
<th>PGI</th>
<th>Less: Vacancy</th>
<th>EGI</th>
<th>Less: Operating Expenses</th>
<th>Less: Capital Expenditure</th>
<th>Net Operating Income</th>
<th>Add: Capital Expenditures</th>
<th>Less: Interest</th>
<th>Less: Depreciation</th>
<th>Taxable Income</th>
<th>Tax Liability @ 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td><strong>$50,000</strong></td>
<td>0</td>
<td><strong>$50,000</strong></td>
<td>(10,000)</td>
<td>0</td>
<td><strong>40,000</strong></td>
<td>0</td>
<td>(24,929)</td>
<td>(9,808)</td>
<td>4,723</td>
<td>1,417</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td><strong>$52,500</strong></td>
<td>0</td>
<td><strong>52,500</strong></td>
<td>(10,500)</td>
<td>0</td>
<td><strong>42,000</strong></td>
<td>0</td>
<td>(24,310)</td>
<td>(9,808)</td>
<td>7,342</td>
<td>2,202</td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td><strong>$55,125</strong></td>
<td>0</td>
<td><strong>55,125</strong></td>
<td>(11,025)</td>
<td>0</td>
<td><strong>44,100</strong></td>
<td>0</td>
<td>(23,646)</td>
<td>(9,808)</td>
<td>10,106</td>
<td>3,032</td>
</tr>
<tr>
<td><strong>Year 4</strong></td>
<td><strong>$57,881</strong></td>
<td>0</td>
<td><strong>57,881</strong></td>
<td>(11,576)</td>
<td>0</td>
<td><strong>46,305</strong></td>
<td>0</td>
<td>(22,934)</td>
<td>(9,808)</td>
<td>13,023</td>
<td>3,907</td>
</tr>
<tr>
<td><strong>Year 5</strong></td>
<td><strong>$60,775</strong></td>
<td>0</td>
<td><strong>60,775</strong></td>
<td>(12,155)</td>
<td>0</td>
<td><strong>48,620</strong></td>
<td>0</td>
<td>(22,171)</td>
<td>(9,808)</td>
<td>8,002</td>
<td>2,401</td>
</tr>
</tbody>
</table>

15. Assuming a two-year holding period, should the investor make this investment given a required levered, after-tax, rate of return of 14 percent?

*Solution: The after-tax cash flows are calculated below:*

<table>
<thead>
<tr>
<th>Year</th>
<th>PGI</th>
<th>Less: Operating Expenses</th>
<th>Less: Capital Expenditure</th>
<th>Net Operating Income</th>
<th>Add: Capital Expenditures</th>
<th>Less: Interest</th>
<th>Less: Depreciation</th>
<th>Taxable Income</th>
<th>Tax Liability @ 28%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td><strong>$105,100</strong></td>
<td>(7,400)</td>
<td>(51,530)</td>
<td><strong>46,170</strong></td>
<td>0</td>
<td>(30,000)</td>
<td>(10,897)</td>
<td>5,272</td>
<td>1,476</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td><strong>$113,508</strong></td>
<td>(7,946)</td>
<td>(53,591)</td>
<td><strong>51,971</strong></td>
<td>0</td>
<td>(29,735)</td>
<td>(10,897)</td>
<td>11,339</td>
<td>3,175</td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td><strong>$122,589</strong></td>
<td>(8,581)</td>
<td>(55,735)</td>
<td><strong>58,273</strong></td>
<td>0</td>
<td>(28,735)</td>
<td>(10,897)</td>
<td>5,272</td>
<td>1,476</td>
</tr>
</tbody>
</table>
Net Operating Income | 46,170 | 51,971
---|---|---
Less: Debt Service | (33,310) | (33,310)
**Before-Tax Cash Flow** | 12,903 | 18,661
Less: Tax Liability | (1,476) | (3,175)
**After-Tax Cash Flow** | $11,383 | $15,486

| Selling Price (58,273/0.10 Cap Rate) | $582,730 |
| Less: Selling Expenses @ 7% | (40,791) |
| **Net Sale Proceeds** | 541,939 |
| Less: Adjusted Basis | 478,205 |
| **Taxable Gain** | 63,734 |
| Less: Depreciation Recapture | (21,795) |
| **Capital Gain** | 41,939 |
| **Capital Gain Tax @ 15%** | 6,291 |
| Add: Depreciation Recapture @ 25% | 5,449 |
| **Taxes Due on Sale** | $11,740 |

| Net Sale Proceeds | $541,939 |
| Less: Remaining Mortgage Balance | (368,115) |
| **Before-Tax Equity Reversion** | 173,824 |
| Less: Taxes Due on Sale | (11,740) |
| **After-tax Equity Reversion** | $162,085 |

The cash flow stream is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>After-Tax Cash Flows</th>
<th>After-Tax Equity Reversion</th>
<th>Total Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(125,000)</td>
<td>(125,000)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>11,383</td>
<td>11,383</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>15,486</td>
<td>162,085</td>
<td>177,571</td>
</tr>
</tbody>
</table>

These cash flows are discounted at the levered, after-tax, required rate of return of 14%, resulting in an NPV of $21,620. The going-in IRR of these after-tax cash flows is 23.8%. The investment should be made.
## Test Problems

1. The Institute of Real Estate Management (IRM) awards which of the following designations?
   - b. CPM.

2. A contractual relationship where an individual must act in the best interests of a principal when dealing with a third party is termed:
   - a. An agency relationship.

3. The requirement of a real estate manager to act in the best interests of the landlord when dealing with a tenant is termed:
   - c. A fiduciary responsibility

4. Which of these is *not* typically a responsibility of a property manager?
   - d. Income tax analysis.

5. Remodeling and rehabilitation:
   - c. Are expected to add value to the property.

6. Both the owner and the manager may be better off if management’s compensation were based on a percentage of the property’s:
   - c. Net operating income.

7. The following are necessary for a lease to be valid, except:
   - c. Tenant’s contact phone number, or address, in the event of an emergency.

8. The asset manager is NOT responsible for:
   - c. Making maintenance decisions.

9. Demolition of an existing property on an urban site will likely occur:
   - c. When the site value, assuming a new use, exceeds the value of the site under its existing use, plus the cost of demolition.

10. For non-real estate corporations, which of the following is not a potential advantage of a real estate sale-leaseback?
    - c. The firm benefits from property appreciation that occurs after the sale-leaseback.
Study Questions

1. An investor purchased a property with an equity investment of $100,000 and an $800,000 mortgage. She has held the property for five years, and the mortgage now has a balance of $750,000. The market value of her property is estimated to be $950,000. What is her present equity investment?

Solution: Her current equity investment in the property is $200,000, which is equal to the current market value of the property ($950,000) minus the current loan balance ($750,000).

2. What should be included as costs to be matched by value added after rehabilitation?

Solution: An improvement, such as rehabilitation, should be undertaken only if the value added to the property exceeds the cost of improvements, which include material, labor, the contractor’s profit, architect’s fees, and an allowance for contingencies. If the rehab work prevented the owner from renting all or part of the structure for some period of time, the present value of the lost net rental income should be included as a cost.

3. In what ways are the maintenance and repair decision and the rehabilitation decision similar? How do they differ?

Solution: Maintenance and repair costs include expenditures for custodial, corrective, and preventive costs. Sometimes, costs related to the performance of ordinary maintenance are not undertaken; they are deferred. The deferment of such costs may increase the short-term NOI of the property but may result in the accelerated deterioration of the building and reduced cash flows in the future.

Rehabilitation costs include painting, roof replacement, or the replacement of other deteriorated portions of the building. The need to perform rehabilitation costs may be the result of deferred maintenance. Therefore, unlike maintenance and repair costs, rehabilitation costs are not recurring costs related to maintaining the property for ordinary use; rehabilitation costs add value to a property.

The decisions to undertake either maintenance and repair costs or rehabilitation costs are investment decisions. The decision to perform or forego maintenance costs must be evaluated from an economic perspective, as are rehabilitation costs. Neither category of costs results in modifications to the property structure.
4. What factors can change after rehabilitation of a property to produce a higher “after” value than “before” value?

Solution: The rehabilitation of a property can result in a larger net operating income, an extension of the building’s remaining economic life, or a reduction in discount rate used to calculate the present value of future income.

5. What does the property management agreement accomplish?

Solution: The management agreement is the basis of the relationship between the property owner and property manager. This management agreement establishes the manager’s duties, authority, and compensation. The management agreement creates an agency relationship and establishes the fiduciary responsibility of the manager to act in the best interest of the property owner.

6. How does routine maintenance and repair affect a property’s performance?

Solution: Routine maintenance and repair expenditures maintain the condition and economic performance of a property. These costs do not increase the value or economic performance of a property but merely maintain the property’s level of performance. Ideally, the present value of money spent on maintenance and repairs will be equal to or less than the present value of the loss in net operating income and sale proceeds that is averted by undertaking the expenditures. The deferment of routine maintenance and repair expenditures may increase the short-term NOI of the property, but this may result in the accelerated deterioration of the building, which, in turn, will reduce net rental income and the property’s market value.

7. Define deferred maintenance and list some examples.

Solution: Deferred maintenance describes costs related to ordinary maintenance that is not performed at the time a problem is detected. Examples of deferred maintenance include needed roof repairs, HVAC & control systems that are not functioning efficiently, floor repairs, old paint, and broken windows.

8. How is the financial compensation for property managers usually determined? What “agency” problem does this seem to create?

Solution: The typical property management fee is based on a percentage of gross rental income. An agency problem is created by this arrangement because the property manager may be motivated to overly maintain the property or pursue other strategies to promote and maximize the property’s gross income. This may occur because the contract rewards the maximization of gross income with no explicit incentive to minimize operating costs. Therefore, the property manager may be more concerned about the top line and not the bottom line.
9. Why is the tenant mix critically important to the performance of shopping center investments?

_Solution_: The correct mix of tenants in a shopping center can maximize each individual tenant’s sales and the property’s total rent potential. Synergies are created from the complimentary relationship of the property’s tenants. For example, customers shopping at a large anchor store may shop at a smaller business located next to a larger anchor store.

10. In the real estate asset management/investment advisory business, why has performance-based management replaced, or at least supplemented, the “traditional” scheme for compensating some asset managers?

_Solution_: The practice of compensating asset managers based on the value of net assets managed creates an agency problem because managers have the incentive to acquire and hold assets—rather than maximizing the investor’s rate of return. Establishing management compensation based on maximizing the investor’s rate of return better aligns the interests of the manager and investor/principal.

11. In the context of asset management agreements in the private commercial real estate industry, what is a benchmark index? What is the most typical benchmark index?

_Solution_: A benchmark index is a reference point that can be used as a standard to measure the relative performance of an asset manager. The typical benchmark index for evaluating the performance of a manager/adviser hired to acquire and manage a portfolio of publicly traded REITS is produced by NAREIT and Wilshire Associates. The most frequently used index to evaluate the performance of privately held and traded commercial properties is produced by NCREIF.

12. With respect to complying with applicable landlord-tenant laws, would you rather be managing an apartment complex or an office building? Explain.

_Solution_: In general, managing a commercial property, such as an office building, is less problematic than managing an apartment complex for various reasons. State law governs landlord-tenant relationships in the commercial arena, and state courts strictly interpret the language of commercial lease agreements. It is assumed that the parties entering into a commercial lease are competent businesspersons. Although, residential rental properties are also governed by state law, state legislators have passed detailed legislation to protect the rights and interests of households in order to level the playing field between landlords and tenants. Residential tenants are also given certain rights under state laws and landlord actions are restricted under state law.
CHAPTER 23
LEASES AND PROPERTY TYPES

Test Problems

1. A lease in which the tenant pays a rent based in part on the sales of the tenant’s business is known as a:
   a. Percentage lease.

2. When the tenant pays a base rent plus some or all of the operating expenses of a property, the result is a:
   b. Net Lease.

3. Existing leases:
   b. Must be considered more carefully when valuing a multi-tenant office building than valuing an apartment complex.

4. With an expense stop clause:
   b. The landlord is responsible for operating expenses up to a specified level, above which increases in operating expenses become the obligations of the tenant.

5. As a tenant, you wish to turn over all rights and responsibilities of your unexpired lease term to a new tenant. By doing so, you are:
   c. Assigning your leasehold interest.

6. Lease provisions that grant the tenant the right, but not the obligation, to do something generally result in:
   b. A higher base rent.

7. The tenant is responsible for paying property taxes and insurance in a:
   c. Net-net lease.

8. Which of the following statements regarding tenant improvements (TIs) is the least true in the context of commercial real estate leases?
   Actually, both b. and d. are equally untrue.

9. In shopping center leases, rents are typically quoted on the basis of what type of area occupied by the tenant?
   a. Gross leasable area.

10. The typical anchor tenant in a neighborhood shopping center is a:
    d. Grocery store.
Study Questions

1. Assume the owners of a midsize office building recover all operating expenses from their tenants except management and administrative expenses. The total rentable area of the office building is 100,000 square feet. The total amount of operating expenses recoverable from tenants in the current year is $700,000. Tenant B occupies 10,000 square feet of the building and has an expense stop of $5.50 per square foot. How much of the building’s reimbursable expenses will the owners recover from Tenant B?

Solution: With the expense stop, Tenant B is responsible for $7 ($700,000 /100,000SF x 10,000SF) per square foot less the expense stop of $5.50 for each square foot. Therefore, the owners will recover $15,000 ($1.50 x 10,000SF) from Tenant B.

2. Why might a tenant prefer a lease with a higher effective rent than an alternative lease with a lower effective rent?

Solution: A tenant may prefer a lease with a higher effective rent than an alternative lease with a lower effective rent for various reasons. For example, a tenant may prefer a longer-term lease with a higher effective annual rent in order to secure appropriate space for a longer period and to guard against future rental rate increases. In general, the effective rent does not address broader considerations such as releasing costs, the desire for flexibility, and the desire of tenants and owners to avoid the risks associated with having to replace one lease with another.

3. Describe the most common methods used to specify rent changes over time for a commercial lease.

Solution: The most common methods used to specify rent changes are a flat rent with an expense provision, graduated rent clauses, indexed leases, and percentage rent. When fixed rental rates are observed, the lease is likely to include a provision that requires the tenant to pay some or all of the property’s operating expenses. A graduated rent clause provides for prespecified increases in the contract rental rate. An indexed lease allows for rent adjustments that are tied to changes in a pre-specified index, such as the consumer price index (CPI). A percentage lease consist of a fixed component (base rent) and a percentage rent clause that entitles owner to receive a prespecified percentage of tenant sales, or a percentage of tenant sales that exceed some minimum threshold amount.

4. What factors tend to make both owners and tenants prefer longer-term leases, all else being equal?

Solution: Both tenants and landlords face significant re-leasing costs upon a tenant vacating a property. In addition, both prefer to avoid the uncertainty
associated with replacing one lease with one another. This is known as interlease risk. Therefore, all else being equal both tenants and landlords prefer longer-term leases.

5. Assume a small office building has a total usable area of 40,000 square feet and 5,000 square feet of common area. Tenant Z occupies 6,000 square feet of usable area. What is Tenant Z’s rentable area?

Solution: The rentable area of a tenant’s leased space is equal to the usable area, plus a prorated share of any common area. Based on a load factor of 1.125 (45,000 of rentable space/40,000 of usable space), Tenant Z has 6,750 square feet of rentable space (6,000 x 1.125).

6. Assume a retail tenant is paying a base rent of $120,000 per year (or $10,000 per month). In addition, the tenant must pay 7 percent of gross store sales in excess of $143,000 per month as percentage rent. If the store produces $170,000 in gross sales in a month, what is the percentage rent in that month? What is the total rent due for the month?

Solution: The percentage month for the month is $1,890 (170,000 – 143,000 = 27,000 x 0.07). The total rent due for the month is $11,890 ($1,890 + $10,000).

7. A prospective tenant has presented two lease proposals to the owner of an office building. The first alternative has a five-year term and a contract rate of $16.00 per square foot in the first year of the lease. The rental rate then steps up 3 percent per year over the remainder of the lease term. So, for example, the rental rate in year 2 (months 13 – 24) would be $16.48. The second lease alternative is also a five-year lease with an initial contract rate of $16.00 per square foot. However, the rental rate on this lease is indexed to inflation with adjustment made at the beginning of each year based on the actual rate of inflation in the previous year. The owner of the office property projects that inflation will run at a rate of 3 percent per year over the five-year lease term.

a. What are the owner’s projected payments over the five-year term for the two alternatives?

b. Which option is the owner likely to prefer and why?

Solution:

a. The projected payments for each alternative are as follows: year 1, $16.00; year 2, $16.48; year 3, $16.97; year 4, $17.48; and year 5, $18.01.

b. Under the lease with the 3 percent step-up provision, the owner bears all the risk associated with unexpected changes in operating expenses. Therefore, the owner prefers the rental rate that is tied to the rate of inflation because this shifts the risk of unexpected increases in inflation from the owner to the tenant.
CHAPTER 24

DEVELOPMENT: THE DYNAMICS OF CREATING VALUE

Test Problems

1. The first step in the process of development is to:
   a. Establishing site control.

2. To gain control of a site, a developer may use:
   e. All of the above

3. Which of these stages of the development process comes first?
   a. Feasibility analysis, refinement, and testing

4. All of the following are valuable in facilitating the development permitting process except:
   d. Establishing the strength of your legal position early in the process.

5. A method of construction where the actual construction begins before the design is finished is known as:
   d. Fast-track.

6. In a land-development, the primary design professional is a:
   c. Land planner.

7. Soft costs include all except:
   e. Land improvement costs.

8. Which statement is incorrect concerning the typical construction loan?
   d. The loan extends a few years after a certificate of occupancy is issued.

9. The professional responsible for determining adequate specifications for building footings and foundation is a:
   d. Soils engineer.

10. When construction costs exceed the amount of the construction loan, a developer frequently will seek to cover the “gap” with:
    c. Mezzanine financing.

Study Questions

1. Why is the permitting stage of development often the riskiest stage of the process?
Solution: The process of obtaining permitting entails a commitment of significant time and cost. However, the ultimate outcome is uncertain as to whether the project will go forward. Public hearings, for example, are especially treacherous for developers because the local land use authorities may effectively kill a project. Furthermore, community opposition to the developer’s plans may result in costly delays or force the developer to terminate the project.

2. List at least five ways that a developer may attempt to reduce the risks of the permitting process.

Solution: A developer may attempt to reduce the risks associated with the permitting process in many ways. The developer may offer provisions for buffering the surrounding land from the proposed project. The developer may provide an improvement, such as a park, that will benefit the local neighborhood. The developer should be prepared to negotiate with the land use authorities and neighborhood owners groups. The developer should establish a positive relationship with the local regulatory authorities and keep them informed throughout the development process.

3. Explain what a construction manager is, and why the role could be important in development.

Solution: A construction manager serves as the developer’s liaison and representative on the project site. This is an especially important role because the developer is responsible for monitoring and addressing any problems that occur during the construction process. The construction manager also may stand in for the developer in meetings between the general contractor and architect.

4. In selecting an architect, what must a developer consider about the architect besides design credentials and relevant experience?

Solution: The selection of an architect is a critical decision for the developer. It is important that the architect have values and goals that are comparable to those of the developer. Another selection factor is the architect’s communication skills and rapport with the developer. Additionally, the presentation skills of the architect are important because architects play a vital role in representing the developer in public meetings with land authorities, particularly during the permitting stage.

5. Why, in some cases, must a developer begin leasing efforts even before the design is complete?

Solution: Depending on the property type, leasing efforts should begin before the completion of the design stage. For example, leasing efforts for office buildings and other facilities with long-term tenants should typically begin well before the tenant actually requires space. Presales are also frequently required for obtaining financing for condominium projects. Retail and office projects may not be viable
without securing anchor tenants. Take-out commitments for construction loan financing frequently require preleasing to be in process.

6. Compare the advantages of competitive bidding for a general contractor with negotiated cost plus fee. What is the argument for using a maximum cost with sharing of overruns or savings between developer and general contractor?

Solution: The advantage of competitive bidding for a general contractor is that the selection criterion is based purely on the lowest cost contract price. It places a premium on delivering the proposed project at the lowest possible price. A critical assumption in competitive bidding is that the bidders will offer bids based on acceptable quality standards, and will execute construction at those standards. Unfortunately, this is sometimes difficult to assure. Assuming an owner has confidence in the professionalism of all the bidders, a competitive bidding situation can be a good solution to a situation where the primary need is to maximize the value of every dollar committed to the project. Also, most government projects are based on competitive bidding for a general contractor.

On the other hand, a negotiated cost and fee contract reduces the incentive to “cut costs” while including a maximum cost provision. Therefore, if the cost exceeds the maximum contract amount, the developer and general contractor split the overrun. Conversely, if the cost is less than the maximum amount, the savings are shared by both parties.

7. Explain the possible advantages of miniperm financing as opposed to traditional construction financing followed by “permanent” financing.

Solution: A miniperm loan serves as a construction loan for a few years after the property is completed. The typical term for a miniperm loan is five years. As a rental property becomes fully occupied and establishes a performance record, it tends to reduce the property’s risk and increase its value. Therefore, a year or two after initial occupancy, lower cost financing may be available. A mini-perm loan can enable the owner to reach that point before needing to pay off the construction financing.

8. Why is property development more vulnerable to business cycle risk than investment in existing property of similar type?

Solution: New development projects typically possess the highest cost structure in the real estate market and, consequently, have the highest-break even cost points. Therefore, a downturn in the business cycle will adversely affect a new project more severely.