READING 39: PRIVATE REAL ESTATE INVESTMENTS

LESSON 1: REAL ESTATE: BASIC FORMS AND CHARACTERISTICS AND PRIVATE MARKET REAL ESTATE EQUITY INVESTMENTS

LOS 39a: Classify and describe basic forms of real estate investments.

Vol 5, pp 7–9

Real Estate Investment: Basic Forms

Real estate investments can be classified into different forms on the basis of:

- Whether the investment is being made in the private or public market.
  - Investments in private markets can be made either directly or indirectly:
    - A direct investment can be made by investing in an asset (e.g., purchasing a house), or attaining a claim on an asset (e.g., through giving a mortgage loan to the purchaser).
    - An indirect investment can be made through different investment vehicles (e.g., partnerships and commingled real estate funds or CREFs).
  - Investments in public markets are usually made *indirectly* through ownership of securities that serve as claims on the underlying assets. Examples include investments in a real estate investment trust (REIT), a real estate operating company (REOC), or a mortgage-backed security.
- Whether the investment is structured as equity or debt.
  - An equity investor has an ownership interest in real estate or in securities of an entity that owns real estate. Equity investors have control over decisions such as whether to obtain a mortgage loans against the asset, who should be responsible for property management, and when to sell the real estate.
  - A debt investor is a lender who owns a mortgage loan or mortgage securities. Typically, the real estate serves as collateral for the loan, with the lender having a priority claim on the asset.
  - The value of the equity investor's interest in the real estate is equal to the value of the real estate minus the amount owed to the lender.

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The different forms of real estate investments are summarized in Table 1-1. This classification of real estate investments into four quadrants makes it easier for investors to identify the different risk and return characteristics associated with each classification, and to make investment decisions aligned with their objectives.

Table 1-1: Examples of the Basic Forms of Real Estate Investment

	Equity	Debt
Private	Direct investments in real estate. This can be through sole ownership, joint venture, real estate limited partnerships, or other forms of commingled funds.	Mortgages
Publicly traded	Shares of real estate operating companies and shares of REITs.	Mortgage-backed securities (Residential and commercial)

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Each form of real estate investment has its own risks, expected returns, regulations, legal structures, and market structures.

- Private real estate investments are indivisible and therefore, tend to involve larger amounts.
- Public real estate investments allow the ownership or claim on the property to be divided, which makes them more liquid than private real estate investments, and also allows investors to diversify by purchasing ownership interests across several properties.
- Private equity investment in real estate requires the owner to manage the property herself or to hire a property manager. REOCs and REITs have professional teams manage their real estate investments, so investors in publicly traded real estate investments do not require real estate management expertise.
- Equity investors usually require a higher rate of return than debt investors as they take on greater risk. Their claim on the interim cash flows and proceeds from sale of real estate property is subordinate to that of debt holders. However, debt investors usually do not participate in any upside in the value of the underlying real estate.
- The return to equity investors in real estate has two components: an income stream (e.g., rental income) and a capital appreciation component.

LOS 39b: Describe the characteristics, the classification, and basic segments of real estate. Vol 5, pp 9–13

If these returns are less than perfectly positively correlated with the returns to stocks and/or bonds, then adding equity real estate investments to a traditional portfolio offers diversification benefits.

Real Estate Characteristics

Real estate has several characteristics that make it different from traditional asset classes like stocks and bonds. These unique characteristics complicate the measurement and assessment of performance of real estate portfolios.

Heterogeneity and fixed location: While all bonds belonging to the same issue and all stocks of a particular type in the same company are identical, no two real estate properties are exactly the same. Real estate properties differ with respect to size, location, lease terms, quality of tenants, and so on.

High unit value: Real estate properties typically have a much higher unit value compared to bonds or stocks since they are indivisible. This makes it difficult to construct a diversified real estate portfolio unless large sums are available for investment.

Management intensive: Investors in stocks and bonds do not take part in the day-to-day management of the company. On the other hand, private real estate investments require active management to maintain the properties, negotiate leases, and collect rents. Property management may be undertaken by the owner herself or delegated to a property management company but in either case, these additional costs must be taken into account when investing in real estate.

High transaction costs: Buying and selling real estate entails high transaction costs in the form of fees paid to appraisers, lawyers, and construction professionals.

Depreciation: Buildings decline in value over time as a result of use and wear and tear. Further, real estate can lose value due to changes in location and design preferences of end users.

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Need for debt capital: Since investment outlays for real estate properties tend to be relatively large, access to funds and the cost of funds are important considerations. When debt capital is relatively scarce and/or interest rates are relatively high, real estate values tend to be lower.

Illiquidity: Direct investments in real estate tend to be relatively illiquid. It may take a relatively long period of time for an investor to be able to sell a property at a price close to its fair market value.

Difficulties in price determination: Due to the heterogeneity of properties and infrequent transactions, appraisals are required to assess changes in value over time. Further, limited market participation and the importance of local knowledge make the real estate market relatively inefficient. Investors who have superior information and value-assessing skills can exploit these market inefficiencies. On the other hand, markets for stocks and bonds of public firms tend to be much more active and efficient.

The market for REITs has expanded rapidly over recent years as they overcome some of the problems associated with direct investments in real estate.

- Shares of REITs are more actively traded so they are more likely to reflect market values.
- REITs provide or hire professional property managers.
- REITS allow investors to add a diversified portfolio of real estate investments to their overall portfolios.

Real Estate Classifications

Real estate investments may be classified as residential or non-residential properties. Another potential classification is single-family residential, commercial, farmland, and timber.

Residential properties: These generally provide housing for individuals or families, and include single-family houses (which may be owner-occupied or rental properties), and multi-family properties such as apartments (which are usually classified as rental properties even if the owner or manager occupies one of the units). Residential real estate properties (especially multi-family properties) that are purchased with the intent to let, lease, or rent are usually classified as **commercial real estate properties**.

Non-residential properties include (1) commercial properties other than multi-family properties (as these are residential properties), (2) farmland, and (3) timberland.

Commercial real estate properties: Theses properties are usually classified by their end use. In addition to multi-family properties, commercial real estate properties include offices, industrial and warehouse properties, retail properties, hospitality properties (e.g., motels and hotels) and others (e.g., parking facilities, restaurants, and recreational uses such as country clubs).

Some commercial properties, such as hotels, shopping centers, and recreational facilities require more active management than others. Such properties are considered riskier by investors because of the operational risks involved. As a result, investors require a higher rate of return on these management-intensive properties.

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Farmland and timberland: These properties are unique in the sense that they can be used to produce a saleable commodity. Investors can generate income by selling the commodity or leasing out the land. Primary determinants of revenue are harvest quantities and commodity prices, which are affected by factors that are outside the control of the producer. Farmland and timberland also have potential for capital appreciation.

LOS 39c: Explain the role in a portfolio, economic value determinants, investment characteristics, and principal risks of private real estate.
Vol 5, pp 13–17

LOS 39l: Explain the role in a portfolio, the major economic value determinants, investment characteristics, principal risks, and due diligence of private real estate debt investment. Vol 5, pp 17–18

Benefits of Real Estate Equity Investments

- Real estate investments can generate current income by letting, leasing, or renting the property. However, the amount received by the investor is affected by operating expenses, taxes, and financing costs.
- Real estate prices may increase over time, so capital appreciation can contribute to an investor's total return.
- Real estate values usually rise in an inflationary environment, so real estate investments serve as an inflation hedge.
- Investments in real estate provide diversification benefits to investors as their performance as an asset class has historically not been highly correlated with the performance of more popular asset classes such as stocks, bonds, and money market funds.
- Investors in real estate may receive a favorable tax treatment. For example, in the United States:
    - Investors in private real estate are allowed to depreciate their properties over a time period that is shorter than the period over which the property actually depreciates. As a result, annual depreciation is higher and taxable income is lower so investors pay lower taxes.
    - REITs do not pay corporate income taxes, so investors are able to avoid double taxation.

Publicly traded REITs have been found to have a higher correlation with stocks and bonds compared to private real estate investments. This suggests that public and private real estate investments do not necessarily provide the same diversification benefits.

Risks Factors

- Business conditions: Changes in economic factors such as GDP growth, employment, household income, interest rates, and inflation rates affect both (1) real estate values and (2) rental income.
- Long lead time for new developments: Real estate projects take a long time to be completed and market conditions can change significantly during their development. If the market weakens over the development period, rental rates can be lower and vacancy rates higher than originally anticipated, resulting in lower returns than initially envisaged by investors.

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- Cost and availability of debt and equity capital: Due to the large initial outlay required, real estate investments typically require debt financing. As a result, demand for real estate is affected by the (1) availability and (2) cost of debt capital. Scarcity of debt capital and high financing costs lead to lower real estate values. As far as equity capital is concerned, higher expected returns on stocks and other investments reduce the availability of equity capital for real estate investments.
- Unexpected inflation: Real estate provides protection against inflation in the following ways:
    - Lease contracts may provide for rent increases in line with the inflation rate.
    - Construction costs (replacement cost) rise with inflation so real estate values increase with inflation.

  However, if the real estate market is relatively weak, high vacancy rates and low rents could mean that real estate values may not keep up with inflation.
- Demographics: The demand for real estate is also affected by factors such as the size and age distribution of the population in the local market, the distribution of socioeconomic groups, and the rate of new household formation.
- Lack of liquidity: Real estate investments tend to have poor liquidity due to (1) the large outlays required and (2) the time taken and costs incurred to sell. Lower liquidity means that a longer time period would be required to realize cash, and there is also the risk of adverse market movements.
- Environmental: Poor environmental conditions (e.g., contaminants related to a prior owner or an adjacent property owner) can have an adverse impact on the value of a property.
- Availability of information: There is a risk of overpaying for a property if the owner makes the investment decision based on insufficient or inaccurate information. Over the last few years however, the amount of data in the real estate space has improved considerably (e.g., with the availability of real estate indices for many countries).
- Management: Management of real estate can be categorized into two levels:
    - *Asset management:* This refers to the management of an investment's financial performance and making changes when necessary.
    - *Property management:* This refers to the physical maintenance and day-to-day operations of the property.

  Management risk reflects the ability of both asset managers and property managers to make the right decisions regarding the operation of the property.
- Leverage: This refers to the use of borrowed funds to finance a real estate purchase. The ratio of borrowed funds to total purchase price is called the *loan-to-value (LTV) ratio*. A higher ratio implies greater use of leverage, which leads to higher risk for equity investors since lenders have a priority claim on cash flows and on the value of the property in case of default. A small decrease in NOI can have a significant negative impact on the cash flow available to equity investors after meeting debt servicing obligations.

  Note that leverage affects the returns on an investment in real estate, but has no impact on the value of the property itself. Also, if an investor finances a real estate investment entirely with her own equity there is no risk from financial leverage, but it does not mean

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that she has eliminated her interest rate risk. This is because if interest rates rise, there is a risk of real estate values declining due to higher financing costs for buyers (who generally tend to finance part of their real estate investments with debt).

- Other risk factors: Other risk factors include unobserved physical defects in the property, natural disasters, and acts of terrorism.

Risk that can be identified in advance can be hedge away through insurance. Investors can mitigate property-specific risks through diversification and in certain cases transfer risks to other parties through contractual arrangements (e.g., raising rental rates in line with inflation).

Real Estate Risk and Return Relative to Stocks and Bonds

Real estate investments have both bond-like and stock-like characteristics.

- Lease agreements call for periodic rental payments, similar to periodic coupon payments on bonds.
- At the end of the lease term there is uncertainty regarding the renewal of lease and the rental rate, which depend on availability of competing space, the profitability of companies leasing the space and macroeconomic factors. These factors also affect stock prices.

Historically, real estate as an asset class has exhibited higher returns and risk than bonds, but lower returns and risk than stocks.

LESSON 2: TYPES OF COMMERCIAL REAL ESTATE AND AN INTRODUCTION TO VALUATION

LOS 39d: Describe commercial property types, including their distinctive investment characteristics. Vol 5, pp 19–22

Commercial Real Estate

Properties that are widely believed to be low-risk include offices, industrial and warehouse properties, retail properties, and multi-family (apartments). Hospitality properties (e.g., hotels) entail higher risk as their returns are highly correlated with the business cycle. For each type of property, location plays a vital role in determining value. Below we discuss the major economic value determinants for each of the different types of commercial real estate properties.

Office

The demand for office buildings is influenced by employment growth, especially in industries that are heavy users of office space, like finance and insurance. Lease lengths for office space vary globally, but are generally influenced by (1) the desirability of the property, (2) the financial strength of the tenant, and (3) other terms in the lease such as future rent changes and whether there is an option to extend the lease.

An important consideration in office leases is whether it is the owner or the tenant who bears the risk of operating expenses (e.g., utilities) increasing in the future. A lease may be structured as a net lease, where the *tenant* is responsible for paying operating expenses or as a gross lease, where the *owner* is responsible for paying operating expenses. Rent for a net lease is *lower* than rent for an equivalent gross lease because the tenant bears operating expenses and takes on the risk of operating expenses rising in the future.

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Office leases may sometimes be structured such that the owner pays for operating expenses, but amount of annual operating expenses paid for by the owner is capped at the level of operating expenses in the first year. The tenant is responsible for paying any increases in operating expenses (as an expense reimbursement).

In a multi-tenant building, expenses are usually prorated among the tenants based on the amount of space they lease. While having multiple tenants may make it a bit tedious to manage the property, it reduces risk as a tenant's non-extension of a lease will not affect cash flows too significantly.

From the discussion above, you should realize that lease terms have a significant impact on the risk and return associated with investing in office buildings. Therefore, it is important for investors to analyze how leases are typically structured in a particular market, and to also stay informed regarding any changes in the typical structure.

Industrial and Warehouse

The demand for industrial and warehouse properties is heavily influenced by the strength of the overall economy, prospects for growth, and import and export activity. Leases for industrial and warehouse properties may also be structured as net leases, gross leases, or leases with expense reimbursements.

Retail

The demand for retail space is primarily influenced by consumers' willingness to spend, which in turn is influenced by the strength of the overall economy, job growth, population growth, and savings rates.

Lease terms for retail space are influenced by the quality of the property as well as by the size and importance of the tenant. Favorable lease terms are usually offered to larger tenants (e.g., a department store) to attract them to the property. Such tenants are referred to as anchor tenants as they attract other tenants.

A type of lease that is unique to retail properties is the percentage lease. Under this type of lease, tenants pay a *minimum* rent as long as their sales remain below a threshold level, but must pay *additional* rent once their sales surpass the threshold level.

For example, a lease may require a tenant to pay a minimum rent of $60 per square foot and an additional 15% of sales once sales exceed $400 per square foot. In this case, 15% of $400 equals the minimum rent of $60 so the $400 threshold is referred to as the natural breakpoint.

- If sales amount to $400 or less, the tenant will keep paying the minimum rent of $60.
- If sales *exceed* $400, let's say they amount to $450, the tenant will have to pay $67.5 [= 60 + 0.15 (450 – 400)].

Note that we will get the same answer if we simply multiply $450 by 15% ($67.5). This is only because $400 is the natural breakpoint. A lease may not always have a breakpoint at its natural level. In such a case, it is important that the lease clearly defines how the rent will be calculated.

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Multi-Family

The demand for multi-family space depends on demographic factors such as population growth, relevant age segment for renters, and propensity to rent. Demand also depends on the cost of ownership relative to the cost of renting (i.e., the ratio of home prices to rents). If home prices rise, people will lean toward renting, and vice-versa. Home prices are also influenced by the level of interest rates. Higher mortgage rates make purchases more expensive to finance, so people shift toward renting.

Leases for multi-family properties usually range from 6 months to 2 years. The tenant may or may not be responsible for paying expenses such as utilities, but is usually responsible for cleaning the space rented and for insurance of personal property, while the owner is usually responsible for the upkeep of common property, insurance, and repair and maintenance of the property.

LOS 39e: Compare the income, cost, and sales comparison approaches to valuing real estate properties. Vol 5, pp 22–27

Appraisals and Value

Since real estate properties are traded relatively infrequently and are unique, appraisals (estimates of value) are important for performance measurement and evaluation. In most cases, appraisals aim to estimate the market value of a property, which can be defined as the amount a *typical* investor would be willing to pay for the property. Other definitions of value include:

- Investment value: This is the value that a *specific* investor places on the property. Investment value may be higher or lower than market value depending on the particular investor's motivations, how well the property fits into her portfolio, her tax circumstances, and so on.
- Value in use: This is the value to a particular investor of using the property (e.g., the value of a manufacturing plant to a company using the building as part of its business).
- Assessed value: This is the relevant value of a property for property tax purposes.
- Mortgage lending value: This is a more conservative value used by mortgage lenders to determine the value of collateral if the borrower defaults.

Introduction to Valuation Approaches

Appraisers typically use the following approaches to estimate value:

Cost approach: Under this approach, the value of a property is estimated as its **replacement cost** (i.e., the current cost to buy the land and construct a new, but similar, property on the site). Adjustments need to be made if:

- The subject property is older or not of a modern design,
- It is not feasible to construct a new property in the current market, or
- The location of the property is not ideal for its current use.

Sales comparison approach: Under this approach, the value of a property is estimated based on **recent transactions** involving similar or comparable properties. Adjustments need to be made for differences in size, age, location, and condition of the subject and comparable properties.

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Income approach: Under this approach, the value of a property is calculated as the **present value of expected future income** from the property, including proceeds from resale at the end of the holding period. The discount rate is based on the expected rate of return that is commensurate with the risk inherent in the investment.

Highest and Best Use

This is an important concept in real estate appraisal. The highest and best use of a vacant site refers to the use that would result in the highest implied value for a property, irrespective of what it is currently being used for. Implied value equals the value of the property after construction less costs to construct the building.

- Value after construction refers to what the property would sell for once it is constructed and leased.
- The cost to construct the building includes profit to the developer for handling construction and getting the property leased.

For example, consider a piece of land which can be used for constructing an apartment building, office building, or a shopping mall. The following information is available:

	Office	Shopping Mall	Apartment
Value after construction	$6 million	$4 million	$5 million
Cost to construct building	$5.5 million	$2.5 million	$4 million
Implied land value	$0.5 million	$1.5 million	$1 million

From the table above, we can see that the highest and best use of the land is to build a shopping mall, as it would result in the highest implied land value ($1.5 million). This is the maximum price that an investor would be willing to pay for this piece of land.

You should also notice here that the highest and best use of the site is not the use that results in the highest total value once the project is completed (value after construction). Even though the office has the highest value if it is built, the relatively high cost to construct means that any investor who wants to develop an office project on the site would pay a maximum of $0.5 million for the land.

The value of a piece of land should be based on its highest and best use even if there is an existing building on the site. If there is an existing building that is not the highest and best use, then the value of the building will be lower, not the value of the land. For example, assume that a site with a warehouse would sell for $2 million (land plus building) and if vacant, the land would sell for $1.5 million. This means that the value of the warehouse (existing building) is $500,000. As long as the value under existing use exceeds the land value, the building should remain. However, if the value under existing use is less than the land value, the existing building should be demolished so that the building that represents the highest and best use can be constructed. For example, if the value as a warehouse (land plus building) were $1.2 million, the implied value of the building is negative $300,000. In this case, the building should be demolished if demolition costs are less than $300,000.

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LESSON 3: THE INCOME APPROACH TO VALUATION

LOS 39f: Estimate and interpret the inputs (for example, net operating income, capitalization rate, and discount rate) to the direct capitalization and discounted cash flow valuation methods. Vol 5, pp 27–44

LOS 39g: Calculate the value of a property using the direct capitalization and discounted cash flow methods. Vol 5, pp 27–44

The Income Approach to Valuation

The **direct capitalization method** and **discounted cash flow method** are two income approaches used to estimate the value of commercial (income-producing) property. Both these methods focus on **net operating income (NOI)** as a measure of income and a proxy for cash flow.

Net Operating Income

The income approach focuses on net operating income (NOI) generated from a property to estimate its value. NOI may either be projected for the entire economic life of the property, or for a typical holding period with the assumption that the property will be sold at the end of the holding period. NOI is calculated as follows (see Example 3-1):

Rental income at full occupancy
+ Other income (such as parking)
= Potential gross income (PGI)
– Vacancy and collection loss
= Effective gross income (EGI)
– Operating expenses (OE)
= Net operating income (NOI)

It is very important for you to remember that:

- Operating expenses include items such as property taxes, insurance, maintenance, utilities, and repairs.
- NOI is a before-tax unleveraged measure of income. It is calculated before deducting financing costs and federal income taxes on income generated from the property.
- Sometimes leases may be structured such that *tenants* are responsible for paying operating expenses. In such cases, those operating expenses are not deducted from income when calculating NOI. In case they have been deducted, the additional income received from the tenants as expense reimbursements would be included in the calculation of NOI.

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Example 3-1: Calculating Net Operating Income (NOI)

Consider the following information regarding an apartment building:

- Total number of units = 60
- Number of units rented = 50
- Rent = $1,200 per unit per month
- Other income = $800 per rented unit per year
- Operating expenses = 30% of effective gross income
- Property management fee = 15% of effective gross income
- Interest expense = $500,000
- Income tax rate = 40%

Calculate the NOI for the property.

Solution:

Rental income at full occupancy	60 × $1,200 × 12 =	$864,000
Other income	60 × $800 =	+48,000
Potential gross income		$912,000
Vacancy loss	10/60 × $912,000 =	–152,000
Effective gross income		$760,000
Operating expenses	30% × $760,000 =	–228,000
Property management fee	15% × $760,000 =	–114,000
NOI		$418,000

Note that income taxes and interest expense are not subtracted in the calculation of NOI.

The Direct Capitalization Method

Under this method, the value of a property is estimated by capitalizing its current NOI at a rate referred to as the **capitalization rate** (or **cap rate**).

The cap rate is closely linked to the discount rate, but they are not the same. The cap rate is applied to first-year NOI, while the discount rate is applied to current and future NOI. Generally, **when income and value are growing constantly at the same rate,** the relationship between the cap rate and discount rate can be expressed as:

$$\text{Cap rate} = \text{Discount rate} - \text{Growth rate}$$

From the formula above, you should recognize that the growth rate is implicit (included) in the cap rate. This point will become clearer in a little bit. The cap rate can be defined as the current yield on an investment:

$$\text{Capitalization rate} = \frac{NOI_1}{\text{Value}}$$

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For the purpose of computing the cap rate, NOI is usually based on the amount expected during the current or first year of ownership of the property. The term going-in cap rate is sometimes used to clarify that the cap rate is based on the first year of ownership. The term terminal cap rate refers to the cap rate that is based on expected income for the year after the anticipated sale of the property.

Rearranging the above equation, we can estimate the value of a property by dividing its first-year NOI by the cap rate.

$$\text{Value} = \frac{\text{NOI}_1}{\text{Cap rate}}$$

An estimate of the appropriate cap rate for a property can be obtained from the selling price of similar or comparable properties.

$$\text{Cap rate} = \frac{\text{NOI}}{\text{Sale price of comparable property}}$$

We mentioned earlier that the growth rate is implicit in the cap rate. To understand this concept, note that the reciprocal of the cap rate (price / NOI) is somewhat similar to the price-earnings multiple for a stock. Just as a higher price-earnings multiple implies higher expected earnings growth, a higher ratio of price to current NOI (and hence a lower cap rate) implies greater income growth potential for a property. As a result, cap rates on comparable properties must still be adjusted to reflect differences in future income growth and risk.

Sometimes, adjustments may need to be made for specific lease terms and characteristics of a market. In the U.K. for example, when lease terms require the tenant to pay all operating expenses, the value of the property is estimated by applying a cap rate to rental payments rather than to NOI. The cap rate derived by dividing rent by recent sales prices of comparables is known as the all risks yield (ARY). The value of a property is then calculated as:

$$\text{Market value} = \frac{\text{Rent}_1}{\text{ARY}}$$

ARY is a capitalization rate and will differ from the required total return (discount rate) an investor might expect to earn through future growth in rents and value. See Example 3-2.

- If rents are expected to remain unchanged for the foreseeable future, then the ARY will equal the total return (discount rate).
- If rents are expected to increase after every rent review, the investor's expected return will be greater than the ARY.
- If rents are expected to increase at a constant compound rate, the investor's expected return will equal the ARY plus the growth rate.

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Example 3-2: Calculating the Value of a Property

The NOI of a property for the first year equals $375,000. Given a capitalization rate on comparable properties of 10%, calculate the value of the property.

Solution:

$$\text{Value} = \frac{\text{NOI}_1}{\text{Cap rate}}$$

$$= \frac{\$375{,}000}{0.1} = \$3{,}750{,}000$$

If a rent review for the property reveals that rents are expected to increase every year by 5%, then the IRR of this property would approximately equal 5% + 10% = 15% (i.e., growth rate plus cap rate).

Stabilized NOI

When applying the cap rate to the first-year NOI for a property, it is implicitly assumed that first-year NOI is representative of the typical first-year NOI for comparable properties. However, sometimes actual first-year NOI for the subject property may *not* be representative of typical or expected first-year NOI (e.g., if the property has a higher-than-expected vacancy rate due to ongoing renovation work). In order to determine the value of the property once the renovation is complete, the appraiser must:

- Project a stabilized NOI, which reflects what NOI will be once the renovation work is complete.
    - Applying the cap rate to the lower (during renovation) NOI will understate the value of the property as it would assume that the lower NOI is expected to continue.
- Base the valuation on a cap rate from comparable properties that are not being renovated, as they represent the typical situation.

If the property is purchased before renovation is complete, a slightly lower price will be paid to reflect the fact that the purchaser would have to wait for a certain period until the property starts bringing in the after-completion or typical (higher) NOI. See Example 3-3.

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Example 3-3: Calculating Value of a Property Based on Stabilized NOI

An investor plans to purchase a property that requires some renovation to be competitive with comparable properties. All renovations will be completed by the seller at the seller's expense. If the property were already renovated, it would have NOI of $12 million next year, which would increase by 4% every year thereafter. Because of the ongoing renovation, NOI will only be $5 million next year. Given that investors would normally require a rate of return (IRR) of 10% to purchase the property once it has been renovated, calculate the current value of the property.

Solution:

Given the required rate of return (discount rate) and the annual growth rate, the cap rate for property can be calculated as:

Cap rate = Discount rate – Growth rate = 10% – 4% = 6%.

The value of the property if it were already renovated is calculated as first-year NOI divided by the cap rate:

Value if renovated = $12 million / 0.06 = $200 million

However, due to the renovation, there is a loss in NOI amounting to $7 million (= $12 million – $5 million). The present value of this loss in income is calculated as:

PV of the loss in value = $7 million / 1.10 = 6,363,636.36

Therefore, the total value of the property is calculated as the value if renovated minus the PV of income lost during the renovation:

Value of the property = $200,000,000 – $6,363,636.36 = $193,636,363.64

Other Forms of the Income Approach

An alternative to using NOIs and cap rates is to use the gross income multiplier, which equals the ratio of the selling price to the gross income expected from the property in the first year after sale. The gross income multiplier is also usually derived from sales of comparable properties (just like cap rates).

$$\text{Gross income multiplier} = \frac{\text{Selling price}}{\text{Gross income}}$$

Once we obtain the gross income multiplier for comparable properties, we apply it to the subject property's expected gross income to estimate value:

$$\text{Value of subject property} = \text{Gross income multiplier} \times \text{Gross income of subject property}$$

A drawback of this approach is that it does not explicitly consider vacancy rates and operating expenses. If the subject property's vacancy rates and/or operating expenses are lower relative to comparable properties, its gross income multiplier (and hence value) should be higher.

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The Discounted Cash Flow Method (DCF)

Under this method, the value of a property is estimated by projecting income beyond the first year and then discounting the income stream (using an appropriate discount rate).

From our earlier discussion, we know that the following relationship between the discount rate and the cap rate holds if income and value for a property are expected to change over time at the same rate:

$$\text{Cap rate} = \text{Discount rate} - \text{Growth rate}$$

Rearranging this formula, we get:

$$\text{Discount rate} = \text{Cap rate} + \text{Growth rate}$$

Therefore, we can say that the investor's total return (discount rate) comes from (1) the return on first-year income (cap rate) and (2) growth in income and value over time (growth rate). If NOI for the property is expected to grow at a constant rate, then the value of the property can be calculated as:

$$\text{Value} = \frac{NOI_1}{(r - g)}$$

Notice that this equation is similar to the constant-growth dividend discount model (Gordon growth model) used to value stocks. r = Discount rate (required rate of return). g = Growth rate for NOI. Note that given the constant growth rate in income, value will also grow at the same rate. r – g = Cap rate

If NOI is expected to remain constant (growth rate = 0) like a perpetuity, then the cap rate and discount rate will be the same. See Example 3-4.

Example 3-4: Appraisal Based on a Constant Growth Rate for NOI

A property's NOI for the first year is expected to be $300,000. NOI is expected to increase by 4% per year for the foreseeable future. The property's value is also expected to increase at a rate of 4% per year. Given that investors expect a rate of return of 10% given the level of risk in the investment, calculate the value of the property at the beginning of the year (today).

Solution:

$$\text{Value of the property} = \frac{NOI_1}{(r - g)}$$

$$= \frac{\$300{,}000}{(0.10 - 0.04)} = \$5{,}000{,}000$$

The Terminal Capitalization Rate

If the growth rate in NOI is not expected to remain constant, investors forecast (1) NOI for each year during a specific holding period and (2) a terminal value (estimated sale price) at the end of the holding period (instead of projecting NOI into infinity). The sum of the present values of these amounts (discounted at the required rate of return) is used as an estimate of the value of the property.

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Terminal value is one of the most important inputs when valuing a property using DCF methodology. Theoretically, it represents the present value of income to be received by the *next* investor. Practically speaking however, it is very difficult to estimate NOI for another holding period beyond the initial one with great accuracy. Therefore, the direct capitalization method is used to estimate terminal value at the end of the holding period.

$$\text{Terminal value} = \frac{\text{NOI for the first year of ownership for the next investor}}{\text{Terminal cap rate}}$$

The terminal cap rate (also called residual cap rate) is selected at the time of valuation and refers to the cap rate that is applied to expected income for the first year after the anticipated sale of the property. The terminal cap rate may be the same, higher, or lower than the going-in cap rate. See Example 3-5.

It would help you to remember the formula, Cap rate = Discount rate – Growth rate, to understand these relationships.

- The terminal cap rate is usually higher than the going-in cap rate as it is applied to an income stream that is more uncertain. Other reasons for a higher terminal cap rate include higher expected future interest rates (discount rates) or lower growth in NOI.
- The terminal cap rate can be lower than the going-in cap rate if investors expect interest rates to be lower and/or growth in NOI to be higher in the future.

Example 3-5: Appraisal Based on Terminal Value

A property's NOI is expected to be $500,000 for the next 6 years because of existing leases. Starting in Year 7, NOI is expected to increase to $700,000 and grow at 2% annually thereafter. The value of the property is also expected to increase by 2% per year after Year 6. Given that investors require a rate of return of 10% and expect to hold the property for 6 years, calculate the current value of the property.

Solution:

The current value of the property equals the sum of the present value of NOI for Years 1–6 and the present value of the terminal value at the end of Year 6.

The present value of NOI for Years 1–6 can be calculated as:

$$N = 6;\ I/Y = 10;\ PMT = 500{,}000;\ FV = 0;\ CPT\ PV \rightarrow PV = \$2{,}177{,}630.35$$

Since NOI and property value are both expected to grow at the same constant rate after Year 6, the terminal cap rate can be calculated as the discount rate minus the growth rate.

The terminal value at the end of Year 6 is calculated as:

$$\text{Terminal value}_6 = \text{NOI}_7 / \text{Terminal cap rate}$$
$$= 700{,}000 / (10\% - 2\%) = \$8{,}750{,}000$$

The present value of the terminal value can be calculated as:

$$N = 6;\ I/Y = 10;\ PMT = 0;\ FV = 8{,}750{,}000;\ CPT\ PV \rightarrow PV = \$4{,}939{,}146.888$$

Therefore, the current value of the property is calculated as 2,177,630.35 + 4,939,146.888 = $7,116,777.24

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Notice that in this example, the going-in cap rate is lower than the terminal cap rate.

- The going-in cap rate is calculated as NOI in the first year divided by the value of the property. The going-in cap rate equals $500,000 / $7,116,777.24 = 7.03%
- The terminal cap rate equals 8%.

In this case, the investor is willing to pay a higher price for current NOI because he knows that NOI will increase when the lease is renewed in 6 years. The expected increase in NOI when the lease is renewed is implicit in the cap rate.

Adopting to Different Lease Structures

Lease structures tend to vary across countries. In the U.K. for example all operating expenses are borne by the tenant, and the cap rate is known as the all risks yield (ARY). If the date of valuation falls between the initial letting (or the last rent review) and the next rent review, adjustments must be made in the valuation process to account for the fact that the current contract rent (also called the passing rent) does not equal the current market rent (also called the open market rent). If the contract rent is lower than the current market rent (which is typically the case), it is likely to be adjusted upwards in the next rent review. Such a property is said to have "reversionary potential" when the current lease term expires.

Two approaches for incorporating the anticipated change in rent into the valuation process are the term and reversion approach and the layer method.

1. Term and Reversion Approach

   This approach splits total value into two components (1) term rent and (2) reversion. See Example 3-6. The value of each component is appraised separately by applying different capitalization rates:

   - Term rent is the passing (current contract) rent from the date of appraisal to the next rent review. The discount rate applied to rental income over the current contract term, term rent is typically lower than the discount rate applied to value the reversion component because it is generally less risky. Receipt of income over the current contract term is relatively more secure as the property is already occupied and tenants are less likely to default because they are on leases with below-market rents.
   - Reversion is the estimated rental value (ERV). The capitalization rate used for appraising this ERV is derived from sales of comparable fully-let properties. Note that this value must be discounted (as it is a future value) from the time of rent review to the present. Convention dictates that the discount rate used to compute the present value of this future reversionary value be the same as the capitalization rate used to compute it (even though they need not be the same in practice).

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Example 3-6: A Term and Reversion Valuation

A property was leased 4 years ago at £600,000 per year. The next rent review is in 2 years. The estimated rental value (ERV) in 2 years based on current market conditions is £800,000 per year and the all risks yield (cap rate) on comparable fully rented properties is 6%. A 5% discount rate is considered appropriate to discount the term rent as it is less risky than market rent. Estimate the value of the property.

Solution:

The present value of the term rent of £600,000 per year for 2 years is calculated as:

$$N = 2;\ I/Y = 5;\ PMT = 600{,}000;\ FV = 0;\ CPT\ PV \rightarrow PV = £1{,}115{,}646.26$$

According to convention, the cap rate (ARY) used to compute the reversionary value is also used to compute the present value of reversionary value.

The value of reversion to ERV (at the time of the rent review) is calculated as:

$$\text{Value of reversion to ERV} = NOI_1 / ARY = £800{,}000 / 6\% = £13{,}333{,}333.33$$

The present value of the reversion component of value is calculated as:

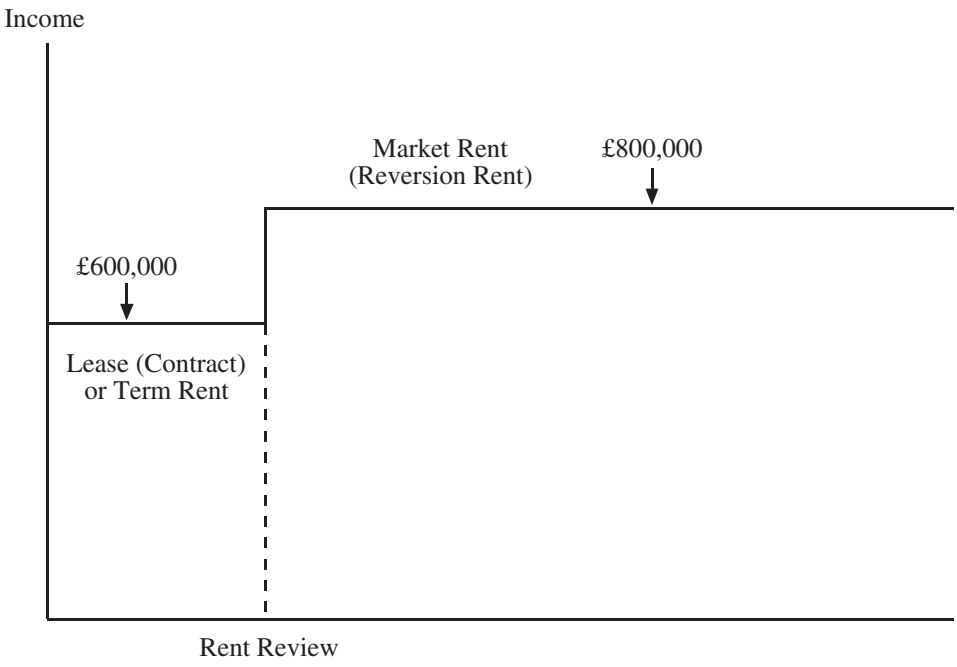
$$N = 2;\ I/Y = 6;\ PMT = 0;\ FV = 13{,}333{,}333.33;\ CPT\ PV \rightarrow PV = £11{,}866{,}619.2$$

Finally, the total value of the property is calculated as the sum of the PV of term rent and the PV of the reversion component.

$$\text{Total estimated value of the property} = 1{,}115{,}646.26 + 11{,}866{,}619.2 = £12{,}982{,}265.46$$

Note that this example is very similar to Example 3-5, except for differences in terminology and the application of different cap rates for the term rent and the reversion to current market rents.

Figure 3-1: Assumed Cash Flows



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2. The Layer Method

This method assumes that one component of income is the current contract rent, which will continue indefinitely (like a perpetuity), and then adds a second component which comes from the value of the incremental rent expected to be received after the rent review. See Example 3-7.

- The cap rate applied to the contract rent is usually close to, or equal to the all risks yield (ARY) since this is relatively secure income (rental rates can only be revised upward in the U.K.).
- The cap rate applied to the additional income expected after the rent review is usually higher than the ARY as it is regarded as more risky. This is despite the fact that rents could increase even more after subsequent rent reviews (and as we know now, higher growth should theoretically lead to a lower cap rate).

Example 3-7: The Layer Method

Continuing from Example 3-6, suppose that the current contract (term) rent should be discounted at 6%, and any incremental rent should be discounted at 7%. Estimate the value of the property using the layer method.

Solution:

The present value of the term rent (bottom layer) into perpetuity is calculated as:

$$\text{Term rent / Term rent cap rate} = 600{,}000 / 6\% = £10{,}000{,}000$$

$$\text{Rent of top layer} = \text{Reversion to ERV} - \text{Term rent(Bottom layer)}$$
$$= £800{,}000 - £600{,}000 = £200{,}000$$

The value of the top layer into perpetuity as of the time of rent review (based on a cap rate of 7%) is calculated as:

$$\text{Value of top layer} = £200{,}000 / 7\% = £2{,}857{,}142.857$$

The present value of the value of the top layer is calculated as:

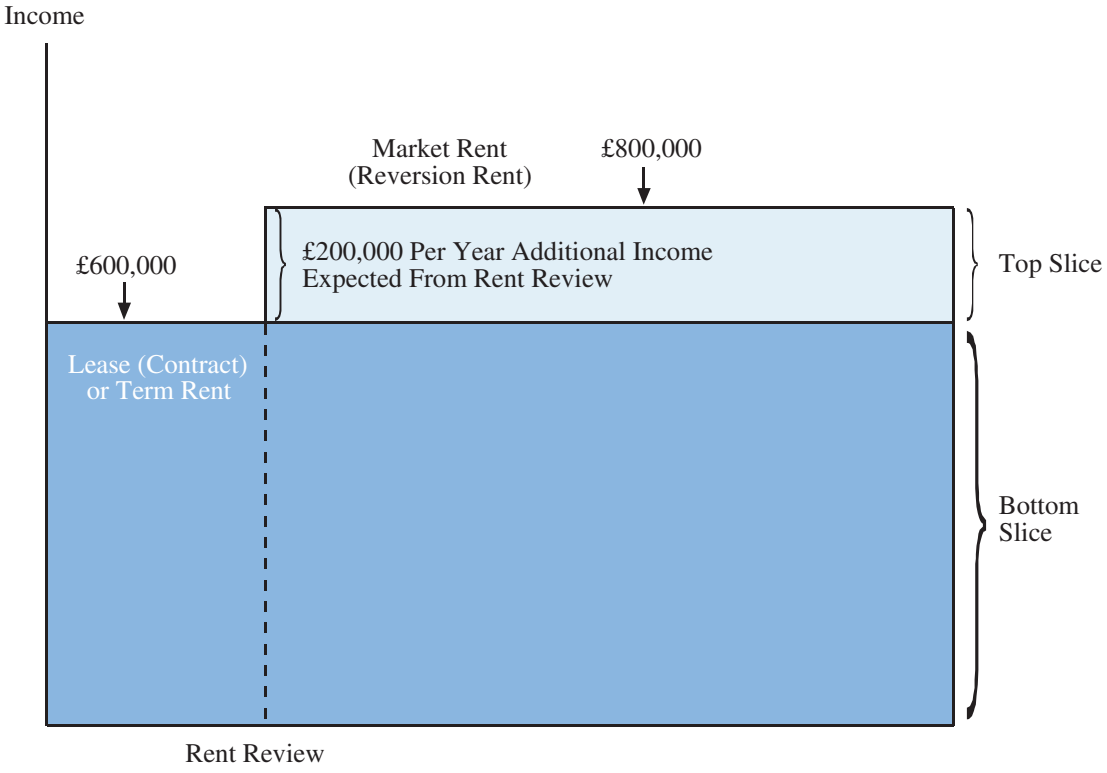
$$N = 2; I/Y = 7; PMT = 0; FV = 2{,}857{,}142.857; \text{CPT PV} \rightarrow PV = £2{,}495{,}539.22$$

The total estimated value of the property equals the sum of the present value of the bottom layer (term rent into perpetuity) and the present value of the top layer (additional income starting after 2 years into perpetuity).

$$\text{Total estimated value of the property} = £10{,}000{,}000 + £2{,}495{,}539.22 = £12{,}495{,}539.22$$

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Figure 3-2: Assumed Cash Flows



The Equivalent Yield

In the two approaches discussed above, we applied different cap rates to the two different sources of income (i.e., current contract rent and market rent). We can also compute the single discount rate that could be applied to both income streams and result in the same value of the property. This rate is called the equivalent yield. Note that the equivalent yield will not be the IRR unless we assume that there will be no increase in rents after the first rent review. Otherwise, it is an average of the two different cap rates (though not a simple mathematical average).

General Steps to a DCF Analysis

Project income from existing leases: This involves keeping track of the start and end dates for each individual lease as well as the various determinants of rent (e.g., base rent, projected increases and adjustments, and expense reimbursements).

Make assumptions about lease renewals: This requires estimating the probability that a lease will be renewed (renewal probability), what rental rate it will be renewed at, whether there will be any vacant days as the owner looks for a new tenant, and how much money would need to be spent on tenant improvements (to fix up the tenant space). These assumptions are important as they affect expected future cash flows from the property.

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Make assumptions about operating expenses: Operating expenses include property taxes, insurance, maintenance, management, marketing, and utilities. They can be categorized as fixed, variable, or a hybrid of the two. Variable expenses depend on the level of occupancy, while fixed expenses do not vary with occupancy levels. However, fixed expenses may change over time (e.g., they may increase with inflation). See Example 3-8.

Make assumptions about capital expenditures: Capital expenditures (e.g., renovations or installation of new heating equipment) tend to be lumpy (i.e., there can be significant capital expenditures in certain years, and none at all in others). Rather than projecting capital expenditure for each year individually, analysts usually estimate an average annual amount of capital expenditure and deduct it from NOI to compute annual cash flows for DCF analysis.

Make assumptions about absorption of any vacant space: This refers to the length of the period a space will likely remain vacant until it is leased.

Estimate resale value (reversion): When performing DCF valuation, analysts should choose a holding period that extends beyond the term of existing leases. This makes it easier to estimate the resale price at the end of the holding period as all leases will reflect market rents.

Select discount rate to find PV of cash flows: It is important to use an appropriate discount rate which reflects the riskiness of the cash flows. The discount rate should be higher than the mortgage rate for a loan on the property because acquiring ownership of the property is more risky than making a collateralized loan. Analysts may sometimes apply different discount rates to cash flows expected from a property depending on their level of risk. For example, they might use a lower discount rate to estimate the present value of income from existing leases, and a higher discount rate for income from lease renewals and resale.

Example 3-8: Operating Expenses

Total operating expenses for an office building are assumed to be 20% fixed and 80% variable. If the 300,000-square-foot building was fully occupied, the utility expense would be $5 per square foot. Given that all utility expenses are allocated to occupied space, calculate the utility expense per occupied square foot if the building is 70% occupied.

Solution:

If the building were fully occupied, total operating expenses would amount to $5 × 300,000 = $1,500,000.

- Fixed operating expenses would amount to 0.2 × $1,500,000 = $300,000
- Variable operating expenses would amount to 0.8 × $1,500,000 = $1,200,000

Variable operating expenses per square foot can be calculated as $1,200,000 / 300,000 = $4/sq. ft.

Since the building is 70% occupied, variable operating expenses would amount to $4/sq. ft. × 300,000 × 0.7 = $840,000.
Total fixed operating expenses would remain the same ($300,000).

Therefore, total operating expenses would amount to $840,000 + $300,000 = $1,140,000.
Operating expense per occupied square foot would come to $1,140,000 / (0.7 × 300,000) = $5.43.

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LOS 39h: Compare the direct capitalization and discounted cash flow valuation methods. Vol 5, pp 44–45

- Under the direct capitalization approach, a capitalization rate or income multiplier is applied to first-year NOI. Any growth in NOI is *implicit* in the capitalization rate. The higher the expected growth, the lower the capitalization rate, and the higher the value of the property.
- Under the DCF approach, the future income pattern, including the effects of growth, is *explicitly* considered. Further, DCF valuation can incorporate other cash flows that might occur in the future and are not reflected in NOI, such as capital expenditures.

The advantage of using an income approach, such as DCF analysis, is that it considers **all** the cash flows that investors are concerned with. Further, it is not dependent on current transactions from comparable sales as long as an appropriate discount rate is selected.

The disadvantage of the income approach is that it requires detailed information and assumptions regarding the growth rate of NOI, and detailed lease-by-lease analysis. Further, selecting an appropriate discount rate and terminal cap rate is critical to the valuation because slight changes in these assumptions have a significant impact on the property's estimated value.

Common errors made by analysts when making assumptions are listed below:

- The discount rate does not reflect the risk.
- Income growth is greater than expense growth.
- The terminal cap rate and the implied going-in cap rate are inconsistent.
- The terminal cap rate is applied to NOI that is not typical.
- The cyclical nature of real estate markets is not recognized.

LESSON 4: THE COST APPROACH

LOS 39i: Calculate the value of a property using the cost and sales comparison approaches. Vol 5, pp 46–52

Two other approaches commonly used to value properties include the cost approach and the sales comparison approach.

The Cost Approach

The cost approach is based on the view that a buyer would not pay more for a property than it would cost to purchase the land and construct a comparable building on it. This approach is generally used to value unique properties or those with a specialized use for which it is relatively difficult to obtain market comparables. Under the cost approach, the value of a property is estimated as the sum of:

- The value of the land, which is usually determined using the sales comparison approach; and
- The value of the building, which is based on adjusted replacement cost.

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Replacement cost refers to the cost of constructing a brand new building today using current construction costs and standards. This replacement cost is then *adjusted* for different types of depreciation (loss in value) to arrive at adjusted or depreciated replacement cost. See Example 4-1. The different types of depreciation include:

- Physical deterioration: This refers to the physical wear and tear of the property as it ages over time. There are two types of physical deterioration:
  - *Curable physical deterioration* refers to a problem whose fixing/repairing will add at least as much to the value of the building as it costs to repair. For example, replacing a damaged roof would be expected to add more to the value of the building than it costs, so it would be classified as curable. The replacement cost estimate for the value of a property assumes that it has zero obsolescence (i.e., it is brand new) so the value estimate assumes that nothing needs to be cured. Therefore, the cost of fixing any curable deterioration must be deducted from the replacement cost estimate. A potential buyer would demand that curable items be fixed before purchasing a property or demand that the purchase price be adjusted for the cost of fixing them.
  - *Incurable physical deterioration* refers to a problem whose cost of repair would exceed the increase in value resulting from the repair, making it unfeasible to fix the problem. For example, there might be some structural problems with the foundation of a building, whose cost of fixing exceeds the increase in value it brings to the building. Since the costs of repairing such deterioration are not actually borne (since the problem is not repaired) analysts account for the effects of the property's age on its value through a depreciation charge. This depreciation charge is based on the effective age of the property relative to its economic life. Note that the effective age of a property may differ from its actual age depending on its amount of wear and tear. For example, if a property has an effective age of 15 years and its economic life is 60 years, then physical depreciation is assumed to be 25% (= 15 / 60). The loss from incurable physical deterioration (depreciation) is estimated by applying this percentage (25%) to the replacement cost *after* deducting the cost of curable physical deterioration.
- Functional obsolescence: This refers to the loss in the value of a building because its current design is not ideally suited for its intended use. Functional obsolescence can result in the building generating less NOI than it would otherwise due to higher operating expenses or lower rent. The cost of functional obsolescence is estimated by capitalizing the reduction in NOI.
- External obsolescence: This refers to the loss in the value of a building due to external factors, such as the location of the property or economic conditions.
  - *Locational obsolescence* occurs when the location of the building is no longer optimal for its intended use. For example, a developer may have constructed a luxury hotel on a piece of land 5 years ago when it was the land's highest and best use. Subsequently however, due to the development of a large manufacturing plant nearby, occupancy rates for the hotel have fallen such that its highest and best use is no longer a luxury hotel, but low-cost apartments for workers at the plant. Therefore, the value of the hotel would decline. Further, the value of the land may also decline as its current highest and best use may yield a lower implied land value. Analysts must be careful not to deduct this (decline in the value of land) portion of the decline in value of the property from replacement cost when adjusting for depreciation.

Functional obsolescence may also be categorized as curable and incurable.

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- *Economic obsolescence* occurs when it is not feasible to construct a new building under current economic conditions. This can happen when rent levels are not high enough to generate a value for a newly-constructed property that is at least equal to development costs (including profit to the developer). As a result, the replacement cost of the new property exceeds the value of a new building if it were developed. In this case, even a new building would have a loss in value.

Example 4-1: Estimating Value Based on the Cost Approach

Consider the following information regarding an industrial property:

- The value of the land (based on recent selling prices of comparable pieces of vacant land) equals $6 million.
- The building was constructed 10 years ago, but based on its current condition, the appraiser estimates that its effective age is 12 years and that it has a remaining economic life of 48 years. Total economic life therefore equals 60 years.
- The building was built with higher ceilings than current standards. It would currently cost $53 million to reproduce a building with the same ceiling height and $48 million to construct a replacement property with the same utility but a normal ceiling height. These cost estimates include constructor's profit of $1 million but do not include developer's profit of $2 million.
- The building's roof needs to be replaced. This would cost $350,000. The building also requires other minor repairs which would cost $150,000. These expenses would increase the value of the building by at least $500,000.
- The poor design of the building leads to operating expenses being higher than they would be otherwise by $100,000.
- There is a design flaw with the building's elevators which would cost $300,000 to fix. Fixing the elevator would lead to an increase in the value of the building by at least this amount.
- Construction of a manufacturing plant nearby has reduced the NOI for the building by $200,000 per year.
- The appraiser has estimated a cap rate of 10% to value the property.

Based on the given information, estimate the value of the property using the cost approach.

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Solution:

Replacement cost (built to current standards)[1]		$50,000,000
Curable physical deterioration		
Replacement of roof	$350,000	
Other minor repairs	$150,000	
	$500,000	
Incurable physical depreciation[2]	$9,900,000	
Curable functional obsolescence		
Fixing of elevators	$300,000	
Incurable functional obsolescence		
Capitalization of higher operating expenses[3]	$1,000,000	
Locational obsolescence		
Capitalization of lower NOI[4]	$2,000,000	
Total depreciation		$13,700,000
Depreciated cost		$36,300,000
Plus: Market value of the land		$6,000,000
Estimated value from the cost approach		$42,300,000

Notes:

1. When provided with reproduction costs and replacement cost, work with replacement cost as it creates a building with the same utility and in line with what is normally required. Both the constructor's and developer's profit must be included in the replacement cost estimate. The constructor's profit ($1m) is already included in the provided replacement cost estimate ($48m) but we must add the developer's profit ($2m).
2. Incurable physical deterioration (depreciation) is applied to replacement cost adjusted for curable physical deterioration ($50m – $0.5m = $49.5m). Ratio of effective age to total economic life = 12 / 60 = 20%. [= 20% × 49,500,000]
3. Higher operating expenses arise from the poor design of the building. These are capitalized at the cap rate. [= $100,000 / 10%]
4. Lower NOI comes from the adverse impact of the new manufacturing plant nearby. This loss is also capitalized at the cap rate. [= $200,000 / 10%]

The cost approach can be used to determine the upper limit on the value of a property, as an investor would never pay more for a property than it costs to purchase the land and construct a comparable building. However, analysts should consider that the development of another building would take time and effort and there may not be adequate demand for another building of the same type in the locality. Still, the approach has value in that a valuation higher than implied by the cost approach would have to be scrutinized in detail.

The main disadvantage of this approach is that it is difficult to estimate depreciation for a property that is older and/or has much obsolescence. Therefore, the cost approach is most appropriate for newer properties that have a relatively modern design in a stable market.

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The Sales Comparison Approach

The sales comparison approach is based on the view that the value of a property depends on what investors are paying for similar properties in the current market. Since it is impossible to find a comparable property that (1) is exactly the same as the subject property in all respects and (2) is sold on the same date as the date of appraisal of the subject property. Adjustments must be made for differences between the subject property and comparable properties relating to size, age, location, property condition, and market conditions at the time of sale. The idea is to determine what comparable properties would have sold for if they were like the subject property. See Example 4-2.

Example 4-2: The Sales Comparison Approach

Consider the following information:

		Comparables		
Variable	**Subject Property**	**1**	**2**	**3**
Size (square feet)	20,000	30,000	25,000	35,000
Age (years)	15	10	5	20
Condition	Average	Poor	Good	Average
Location	Prime	Prime	Secondary	Secondary
Date of sale (months ago)		4	8	6
Sale price		7,500,000	5,000,000	3,500,000
Sale price per square foot		250.00	200.00	100.00

Other information:

- Each adjustment is based on the unadjusted sales price of the comparable.
- The properties depreciate at 2% per annum.
- Condition adjustment: Good, none; Average, –10%; Poor, –20%.
- Location adjustment: Prime, none; Secondary; –15%.
- Over the last 12 months, the market has been rising by 1.5% per month.

Solution:

We illustrate the adjustments for Property 1 in detail below:

- Depreciation is 2% per annum. Since the subject property is 5 years older than Property 1, we will need to apply a further 5 years worth of depreciation on it to make it comparable to the subject property. This implies a downward adjustment of 10% (= 2.0% × 5).
- Since Property 1 is in poor condition while the subject property is in average condition, we will need to adjust Property 1's value upward by 10% to make it comparable to the subject property.
- The value of Property 1 does not need to be adjusted for location because it is in a prime location (like the subject property).
- The market has been rising by 1.5% per month. Since Property 1 was sold 4 months ago, an upward adjustment worth 6% (=1.5% × 4) must be made to its value since the subject property is being valued today.

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The adjustments for all three properties are summarized in the table below:

	Comparables		
Adjustments	**1**	**2**	**3**
Age (years)	–10%	–20%	10%
Condition	10%	–10%	0%
Location	0%	15%	15%
Date of sale (months ago)	6%	12%	9%

The price of the subject property is estimated by computing the average adjusted price per square foot for the comparable properties and then multiplying that average price per square foot by the actual size of the subject property:

		Comparables		
Adjustments	**Subject Property**	**1**	**2**	**3**
Sale price per square foot		250	200	100
Age (years)		–25	–40	10
Condition		25	–20	0
Location		0	30	15
Date of sale (months ago)		15	24	9
Adjusted price per square foot		265	194	134
Average price per square foot	197.67			
Size of subject property (square feet)	20,000			
Appraised value	**$3,953,333.33**			

The calculations for Property 1 are given below. Note that the question states that all adjustments are based on the unadjusted sales price of the comparable.

Age adjustment: –10% × 250 = –$25
Condition adjustment: 10% × 250 = $25
Location adjustment: None required
Time elapsed since date of sale adjustment: 6% × 250 = $15

The quality of the value estimate from the sales comparison approach depends on the number of recent transactions involving comparable properties. Application of this approach is relatively easy when the market is active, but difficult when the market is weak. Even in an active market, it might be difficult to find comparable sales for some properties (e.g., regional malls and special purpose properties).

Further, the sales comparison approach assumes that purchasers behave rationally i.e., the prices they pay reflect current market values. However, this may not always be the case as the investment value of a property to a particular investor may exceed its market value. Further, in times of exuberance when real estate markets are in a "bubble," the sales comparison approach can lead to inflated valuations, especially when considered in light of values in more "normal" market conditions.

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The sales comparison approach is generally used to value single-family homes for which income is not relevant and there is availability of sales data for reasonable comparables.

Reconciliation

The three approaches to valuation (income approach, cost approach, and sales comparison approach) are likely to result in different estimates of value due to differences in their assumptions and sources of data. In order to arrive at a final estimate of value, appraisers must reconcile the differences in value estimates.

An appraiser might give more weight to a particular approach depending on the type of property and market conditions. For example, in an active market with lots of transactions, the appraiser might give more weight to the sales comparison approach. On the other hand, if the market is weak and the building is old (making it difficult to estimate depreciation) she may attach a higher weight to the income approach.

LESSON 5: DUE DILIGENCE IN PRIVATE REAL ESTATE INVESTMENT, INDICES AND PRIVATE MARKET REAL ESTATE DEBT

LOS 39j: Describe due diligence in private equity real estate investment.
Vol 5, pp 54–55

Both private debt and equity real estate investors normally perform due diligence to verify the facts and conditions that might affect the value of the property. Due diligence usually includes the following:

- Review of the lease and history of rental payments.
- Review of operating expenses by obtaining copies of bills (e.g., utility bills).
- Review of cash flow statements of the previous owner.
- An environmental inspection to ensure that there are no contaminant materials on the site.
- A physical/engineering inspection to ensure that there are no structural issues with the property and to check the condition of the building systems, structures, foundation, and adequacy of utilities.
- Review of ownership history to ensure that there are no issues related to the seller's ability to transfer free and clear title that is not subject to any previously unidentified liens.
- Review of service and maintenance agreements.
- A property survey to ensure that any physical improvements are within boundary lines and to identify any easements that may affect value.
- Verification that the property is compliant with zoning, environmental regulations, parking ratios, and so on.
- Verification of payment of property taxes, insurance, special assessments, and so on.

Investors interested in acquiring commercial real estate usually sign a contract or "letter of intent" which states their intent to acquire the property at a specified price, but subject to due diligence. If problems are identified during the due diligence process, the investor may try to renegotiate the price or back out of the deal. While due diligence can be costly, it lowers the risk of unidentified legal and physical problems.

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LOS 39k: Discuss private equity real estate investment indices, including their construction and potential biases. Vol 5, pp 57–61

There are a variety of indices that investors may use to track the performance of real estate. These include appraisal-based indices and transaction-based indices. Investors should be aware of how these indices are constructed and their associated limitations.

Appraisal-Based Indices

These indices rely on appraisals of value (rather than prices from actual transactions) to estimate changes in the value because real estate transactions involving a specific property occur relatively infrequently. Appraisal-based indices combine valuation information from individual properties to provide a measure of market movements.

A well-known appraisal-based index in the United States is the NCREIF Property Index (NPI). Members of NCREIF submit relevant information including appraised value, NOI, and capital expenditures every quarter. The return for all the properties is then calculated as follows:

$$\text{Return} = \frac{\text{NOI} - \text{Capital expenditures} + (\text{Ending market value} - \text{Beginning market value})}{\text{Beginning market value}}$$

- Beginning and ending market values are based on appraisals of the properties.
- The return computed from the formula is the holding period return or the single-period IRR.

The returns on all the properties in the index are then value-weighted to get the index return.

The above formula for computing the return can be divided into two components.

- NOI divided by the beginning market value equals the cap rate. This is also known as the income return for the property.
- The remaining component, that is, [(Ending market value – Beginning market value – Capital expenditures) / Beginning market value], is referred to as the capital return. In order to have a positive capital return, the increase in market value must exceed capital expenditures during the period.

Appraisal-based indices allow investors to compare the performance of real estate relative to other asset classes such as stocks and bonds. Further, the quarterly returns can be used to measure risk (standard deviation). Investors may also use appraisal-based indices to benchmark returns on their real estate portfolios.

One of the disadvantages associated with appraisal-based indices is the appraisal lag as appraised values tend to lag transaction prices when there are sudden shifts in the market. In a bull market, transactions prices start to rise first, and then as these prices are reflected in comparable sales and investor surveys, they begin to be captured in appraised values. As a result, appraisal-based indices may not reflect changes in transaction prices until much later.

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Another issue related to the appraisal lag is that the lag tends to smoothen returns on the index, (i.e., the index exhibits less volatility). Therefore, appraisal-based indices tend to underestimate the volatility of real estate returns. Finally, the lag in appraisal-based indices tends to result in the index return exhibiting a lower correlation with other asset classes. This can lead to a higher-than-appropriate allocation to real estate in a well-diversified portfolio.

The appraisal lag may be adjusted by "unsmoothing" the index or using a transaction-based index.

Transaction-Based Indices

These indices are based on actual transactions rather than appraised values. However, the fact that the same property does not sell very frequently still needs to be controlled for. This can be done by either creating a repeat sales index or a hedonic index.

- A repeat sales index relies on the repeat sales of the same property. The idea is that if a specific property is sold twice in a given period, its change in value between the two sale dates indicates how market conditions have changed over time. Regression analysis is then used to allocate the change in value to each quarter.
- A hedonic index requires only one sale (instead of repeat sales of the same property). In order to account for the fact that different properties are being sold each quarter, it includes (independent) variables in the regression that control for differences in the characteristics of each property, such as size, age, quality of construction, and location. The unexplained variation in the regression reflects the impact of changes in overall market conditions on values.

Transaction-based indices are considered better than appraisal-based indices. However, the need to use statistical techniques to estimate the index can lead to random elements in the observations (noise).

LOS 39m: Calculate and interpret financial ratios used to analyze and evaluate private real estate investments. Vol 5, pp 61–64

The amount of debt an investor can obtain to finance the purchase of commercial real estate is usually limited by (1) the loan to value ratio (LTV ratio) or (2) the debt service coverage ratio (DSCR), depending on which measure results in a lower loan amount.

The LTV ratio is calculated as follows:

$$\text{LTV ratio} = \frac{\text{Loan amount}}{\text{Appraised value}}$$

The DSCR is calculated as follows:

$$\text{DSCR} = \frac{\text{NOI}}{\text{Debt service}}$$

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Debt service (also referred to as the loan payment) includes both interest payments and principal payments (if required). Principal payments (e.g., on a mortgage) lead to a reduction in the outstanding loan balance. An "interest-only" loan does not have any principal payments during the term of the loan, so the loan balance remains constant over time. See Example 5-1.

Example 5-1: Loan on Real Estate

A property that has recently been valued at $6 million has an NOI of $500,000. A real estate lender is willing to make a 10% interest-only loan as long as the LTV ratio does not exceed 80% and the DSCR is at least 1.25. Calculate the maximum loan amount.

Solution:

Based on the loan-to-value ratio, the loan amount can be calculated as 80% of $6 million, which equals $4.8 million.

Given a DSCR of 1.25, the maximum debt service can be calculated as:

Debt service = NOI / DSCR

Debt service = 500,000 / 1.25 = $400,000

$400,000 is the debt service payment that would result in a DSCR of 1.25 for the loan.

Given that this is an interest-only loan, the loan amount can be simply calculated by dividing the debt service payment by the interest rate.

Loan amount = 400,000 / 0.10 = $4 million

Since the DSCR methodology results in a lower loan amount, $4 million is the maximum amount that can be borrowed.

When investors use debt to finance the purchase of a property, they often calculate the equity dividend rate to measure how much cash flow they are getting as a percentage of their equity investment. This is also referred to as the cash-on-cash return. See Example 5-2.

$$\text{Equity dividend rate} = \frac{\text{First-year cash flow}}{\text{Equity investment}}$$

Example 5-2: Equity Dividend Rate

Continuing from Example 5-1, calculate the equity dividend rate given that the property is purchased at its appraised value.

Solution:

First-year cash flow equals NOI minus debt service.

First-year cash flow = $500,000 – $400,000 = $100,000

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The amount of equity investment equals the purchase price minus the loan amount.

Equity investment = $6 million – $4 million = $2 million

Therefore, the equity dividend rate equals $100,000 / $2,000,000 = 5%

Example 5-3: Leveraged IRR

Continuing from Examples 5-1 and 5-2, given that the property is sold after 5 years for $8 million, calculate the IRR that the equity investor will earn on her investment.

Solution:

At the end of the holding period, the entire loan amount of $4 million is outstanding. The cash flow received by the equity investor upon sale equals the difference between the selling price and the loan amount.

Cash flow received by the equity investor = $8 million – $4 million = $4 million

Further, the investor receives an annual cash flow of $100,000 (difference between NOI and debt service payment) during the holding period.

Therefore, leveraged IRR can be calculated as:

$$N = 5;\ PV = -2{,}000{,}000;\ PMT = 100{,}000;\ FV = 4{,}000{,}000;\ CPT\ I/Y \rightarrow I/Y = 18.77\%$$

Example 5-4: Unleveraged IRR

Using the information from Examples 5-1, 5-2, and 5-3 calculate the IRR if the property were purchased on an all-cash basis.

Solution:

In this case, the investor will receive the entire proceeds from sale ($8 million) as well as annual NOI of $500,000 during the holding period. Note, that the initial investment equals $6 million.

Therefore, unleveraged IRR can be calculated as:

$$N = 5;\ PV = -6{,}000{,}000;\ PMT = 500{,}000;\ FV = 8{,}000{,}000;\ CPT\ I/Y \rightarrow I/Y = 13.43\%$$

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