

Prepared by Dr. Weam Nasan Agha

REA625  
Real Estate Valuation

## Lecture 7



# Real Estate Management

## Lecture 7

REA625

Real Estate Valuation

Prepared by

**Dr. Weam Nasan Agha**

## Recap - Lecture 6

### The Main Valuation Approaches

Factors Influencing the Selection of the Valuation Approach

Combining between Valuation Approaches

### Market (Sales Comparison) Approach

The Definition According to the Three International Standards

Fundamental Economic Principles

Steps in Applying the Sales Comparison Approach

Limitations and Challenges in the Market Approach

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- ✓ *Fundamental Principles of the Income Approach*
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- ✓ *Income Approach Methods*
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### ➤ *Cost Approach*

- ✓ *The Definition According to the Three International Standards*
- ✓ *Core Concept of the Cost Approach*
- ✓ *Fundamental Principles of the Cost Approach*
- ✓ *When is the Cost Approach Applied?*

# The Main Valuation Approaches

## Valuation Approaches

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graph TD; A[Valuation Approaches] --> B[1. Market (Sales Comparison) Approach]; A --> C[2. Income Approach]; A --> D[3. Cost Approach];
```

### 1. Market (Sales Comparison) Approach

**This approach** is based on **comparing the subject property** with **similar properties** that have been sold in the market.

### 2. Income Approach

**This approach** converts **expected future cash flows** into a **present value** through **capitalization or discounting techniques**.

### 3. Cost Approach

**This approach** is based on **estimating the cost of constructing a comparable asset**, less **depreciation**.

## 2.Income Approach

### ➤ The Definition According to the Three International Standards

#### **IVS 2024**

The income approach is one of the valuation approaches that provides an indication of value by converting future cash flows into a single present value, where value is estimated using capitalization or discounted cash flow techniques.

#### **RICS Red Book 2023**

The income approach is defined as a method by which expected future amounts or cash flows are converted into a present capital value using direct capitalization techniques or discounted cash flow (DCF) models.

#### **EVS 2020 – TEGOVA**

The income approach is defined as a valuation method based on estimating the present value of income or future cash flows expected to be generated from the property.

**Property Value Today=Present Value of All Future Cash Flows**

## 2.Income Approach

### ➤ Fundamental Principles of the Income Approach

➤ **Principle 1: Time Value of Money**

➤ **Principle 2: Anticipation of Future Benefits**

➤ **Principle 3: Risk–Return Relationship**

## 2.Income Approach

### ➤ Fundamental Principles of the Income Approach /Principle 1: Time Value of Money/

| Concept                  | Explanation                                        | Example                       |
|--------------------------|----------------------------------------------------|-------------------------------|
| <i>Discounting</i>       | Money today is worth more than money in the future | 100 today > 100 in one year   |
| <i>Compound Interest</i> | Return on return                                   | Investment grows cumulatively |
| <i>Discount Rate</i>     | Reflects risk and opportunity cost                 | Higher risk = higher rate     |

## 2.Income Approach

### ➤ Fundamental Principles of the Income Approach /Principle 2: Anticipation of Future Benefits/

Present value = f (future expectations)

Investors pay today for future income

Expectations influence value more than historical performance

Uncertainty requires risk adjustment

## 2.Income Approach

➤ Fundamental Principles of the Income Approach /**Principle 3: Risk–Return Relationship/**

| Risk Level    | Required Return | Example                      |
|---------------|-----------------|------------------------------|
| <i>Low</i>    | 5–7%            | Government-leased property   |
| <i>Medium</i> | 8–10%           | Office building              |
| <i>High</i>   | 11–15%          | Hotel or development project |

## 2.Income Approach

### ➤ Conditions for Applying the Income Approach

| Condition                    | Description                                    | Requirements                      |
|------------------------------|------------------------------------------------|-----------------------------------|
| <i>1. Income Generation</i>  | The property generates or can generate income  | Actual or potential rental income |
| <i>2. Financial Data</i>     | Availability of income and expense data        | At least 3 years                  |
| <i>3. Active Market</i>      | Availability of comparable rental transactions | Reliable market data              |
| <i>4. Relative Stability</i> | Ability to forecast income                     | Long-term lease agreements        |
| <i>5. Market Rates</i>       | Availability of capitalisation/discount rates  | Market studies                    |

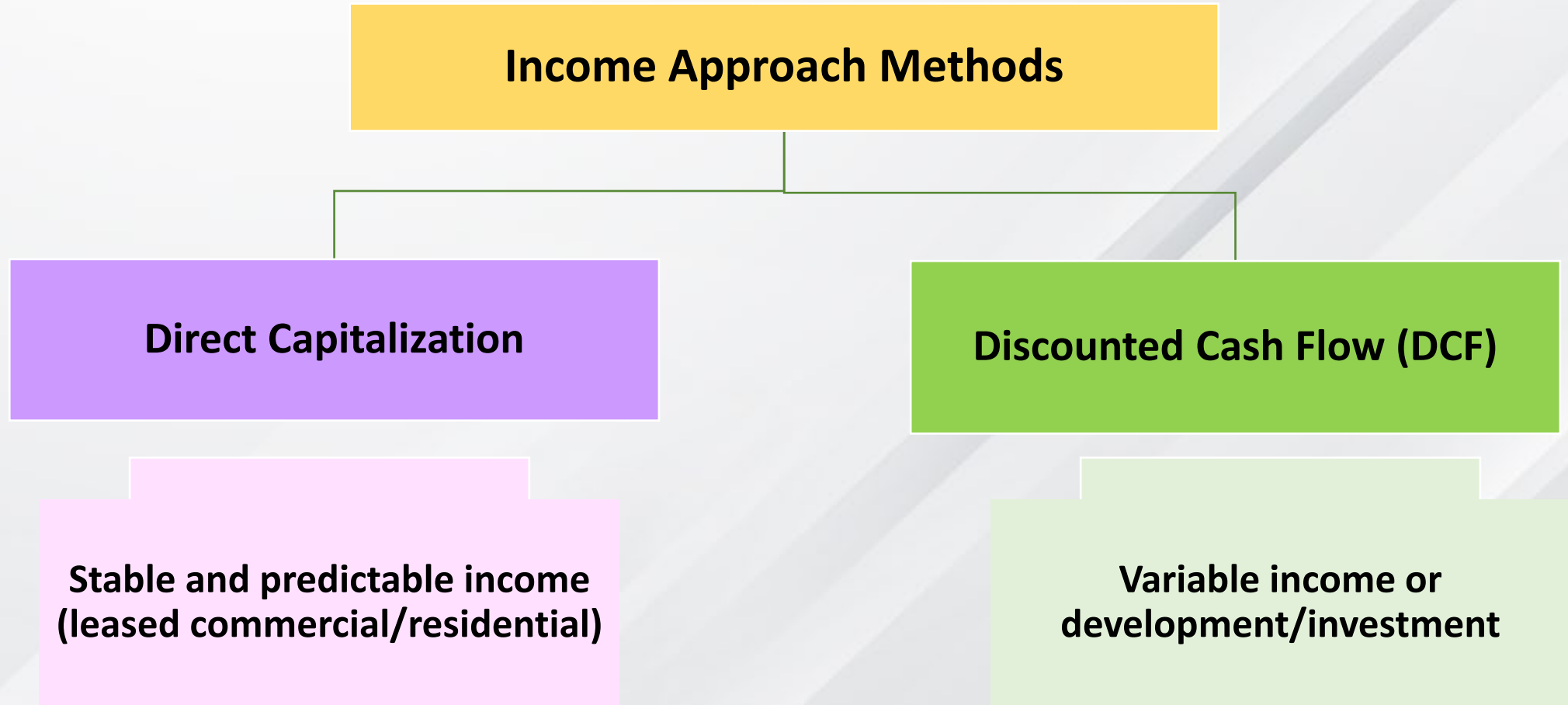
## 2.Income Approach

### ➤ Suitability for the Application of the Income Approach

| ✓ Highly Suitable:                | ⚠ Suitable with Conditions:      | ✗ Not Suitable:                                              |
|-----------------------------------|----------------------------------|--------------------------------------------------------------|
| Leased office buildings           | Properties under development     | Owner-occupied residential properties (non-income producing) |
| Shopping centres                  | Properties with irregular income | Highly specialized properties                                |
| Leased industrial properties      |                                  | Vacant land (typically)                                      |
| Investment residential properties |                                  |                                                              |
| Hotels and resorts                |                                  |                                                              |

## 2.Income Approach

### ➤ Income Approach Methods



## 2.Income Approach

### ➤ Income Approach Methods /Direct Capitalization Method/

Direct capitalization is a **valuation method** that converts a **single year's stabilized net income** into a **capital value** by dividing *the net operating income by a market-derived capitalization rate, or by applying an income multiplier (Years' Purchase - YP).*

$$V = \frac{NOI}{R}$$

| Symbol | Meaning                      |
|--------|------------------------------|
| V      | Market Value of the property |
| NOI    | Net Operating Income         |
| R      | Capitalization Rate          |

$$V = NOI \times YP$$

$$YP \text{ (Years' Purchase)} = 1 \div \text{Capitalization Rate}$$

## 2.Income Approach

### ➤ Conditions for Applying the Direct Capitalization Method

| Condition                       | IVS 2024                                | RICS 2023                          | EVS 2020                             |
|---------------------------------|-----------------------------------------|------------------------------------|--------------------------------------|
| <b>Income Stability</b>         | Stable or stabilized income             | Normalised income                  | Market-supported rental income       |
| <b>Availability of Cap Rate</b> | Derived from comparable market evidence | Extracted from comparable sales    | Based on European market databases   |
| <b>Active Market</b>            | Sufficient comparable transactions      | Minimum level of evidence required | Relatively transparent market        |
| <b>Existing Leases</b>          | Verified and reliable leases            | Legal review required              | Compliance with regulatory framework |

## 2.Income Approach

### ➤ Steps in Applying Direct Capitalization Method

**Step 1: Determine Effective Gross Income (EGI)**

**Step 2: Determine Operating Expenses**

**Step 3: Calculate Net Operating Income (NOI)**

**Step 4: Derive Market Capitalization Rate**

**Step 5: Apply the Formula to Estimate Value**

## 2.Income Approach

### ➤ Steps in Applying Direct Capitalization Method

#### Step 1: Determine Effective Gross Income (EGI)

$$\text{Potential Gross Income (PGI)} = \sum \text{Market Rent for all units}$$

$$\text{Vacancy \& Collection Loss} = \text{PGI} \times \text{Vacancy Rate}$$

$$\text{Effective Gross Income (EGI)} = \text{PGI} - \text{Vacancy \& Collection Loss}$$

$$\text{Total Effective Income} = \text{EGI} + \text{Other Income}$$

**PGI** assumes full occupancy (100%) at market rental levels.

**EGI** reflects the actual income after deducting vacancy and collection losses.

**Other Income** includes parking fees, advertising/signage revenue, and ancillary (supplementary) services.

## 2.Income Approach

### ➤ Steps in Applying Direct Capitalization Method

#### Step 2: Determine Operating Expenses

| Expense Type               | Description                | Notes                     |
|----------------------------|----------------------------|---------------------------|
| <i>Fixed Expenses</i>      | Taxes, insurance           | Not affected by occupancy |
| <i>Variable Expenses</i>   | Utilities, maintenance     | Vary with occupancy       |
| <i>Reserves</i>            | Replacement of major items | Periodic capital items    |
| <i>Property Management</i> | Management fees            | Typically 5–10% of EGI    |

The following are excluded from operating expenses:

- ❖ Debt service
- ❖ Accounting depreciation
- ❖ Personal income tax

## 2.Income Approach

### ➤ Steps in Applying Direct Capitalization Method

#### Step 3: Calculate Net Operating Income (NOI)

$$NOI = EGI - Operating Expenses$$

#### Step 4: Derive Market Capitalization Rate

$$R = \frac{NOI_{Comparable}}{Value_{Comparable}}$$

| Factor                  | Effect                        |
|-------------------------|-------------------------------|
| Higher risk             | Higher cap rate → Lower value |
| Prime location          | Lower cap rate → Higher value |
| Long, secure leases     | Lower cap rate                |
| Weak or unstable market | Higher cap rate               |
| Rising interest rates   | Higher cap rate               |

#### Step 5: Apply the Formula to Estimate Value

$$V = \frac{NOI}{R}$$

## 2.Income Approach

### ➤ Comprehensive Numerical Example – Direct Capitalization Method

#### Property Data

| Item                       | Details                       |
|----------------------------|-------------------------------|
| Property Type              | Office Building (5 floors)    |
| Total Lettable Area        | 2,000 m <sup>2</sup>          |
| Market Rental Rate         | SAR 200/m <sup>2</sup> /month |
| Actual Occupancy Rate      | 90%                           |
| Market Capitalization Rate | 8%                            |

#### Market-Derived Capitalization Rate (Extraction Table)

| Comparable Property | Sale Price (SAR) | Annual NOI | Cap Rate |
|---------------------|------------------|------------|----------|
| Comparable A        | 50,000,000       | 4,000,000  | 8.0%     |
| Comparable B        | 42,000,000       | 3,360,000  | 8.0%     |
| Comparable C        | 38,000,000       | 2,964,000  | 7.8%     |
| Comparable D        | 55,000,000       | 4,565,000  | 8.3%     |
| Weighted Average    |                  |            | 8.0%     |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – Direct Capitalization Method

#### Step 1: Determine Effective Gross Income (EGI)

| Item                                | Calculation                                             | Value (SAR)      |
|-------------------------------------|---------------------------------------------------------|------------------|
| <b>Potential Gross Income (PGI)</b> | $2,000 \text{ m}^2 \times 200 \times 12 \text{ months}$ | 4,800,000        |
| <b>Less: Vacancy (10%)</b>          | $4,800,000 \times 10\%$                                 | (480,000)        |
| <b>Effective Gross Income (EGI)</b> | $4,800,000 - 480,000$                                   | 4,320,000        |
| <b>Parking Income</b>               | Additional income                                       | 120,000          |
| <b>Total Effective Income</b>       | $4,320,000 + 120,000$                                   | <b>4,440,000</b> |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – Direct Capitalization Method

#### Step 2: Determine Operating Expenses

| Expense Type                    | Calculation            | Value (SAR)    |
|---------------------------------|------------------------|----------------|
| Management Fees (8%)            | $4,440,000 \times 8\%$ | 355,200        |
| Maintenance & Operations        | Estimated              | 180,000        |
| Insurance                       | Annual premium         | 45,000         |
| Taxes & Fees                    | As applicable          | 60,000         |
| Replacement Reserves            | 1% of building value   | 100,000        |
| Other Expenses                  | Miscellaneous          | 30,000         |
| <b>Total Operating Expenses</b> |                        | <b>770,200</b> |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – Direct Capitalization Method

#### Step 3: Calculate NOI and Value Estimation

| Item                       | Value (SAR)                                        |
|----------------------------|----------------------------------------------------|
| Total Effective Income     | 4,440,000                                          |
| Less: Total Expenses       | (770,200)                                          |
| Net Operating Income (NOI) | <b>3,669,800</b>                                   |
| Capitalization Rate (R)    | 8%                                                 |
| Market Value = NOI ÷ R     | $3,669,800 \div 0.08$                              |
| Estimated Market Value     | $\approx 45,872,500$                               |
| Rounded Value              | <b><math>\approx \text{SAR } 46,000,000</math></b> |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – Direct Capitalization Method

#### Phase 4: Verification (Back-Testing)

| Item                       | Value                                    |
|----------------------------|------------------------------------------|
| Actual Yield (NOI ÷ Value) | $3,669,800 \div 46,000,000$              |
| Actual Yield               | $7.98\% \approx 8\%$ ✓                   |
| Conclusion                 | Consistent with market rate – Acceptable |

## 2.Income Approach

### ➤ Income Approach Methods /Discounted Cash Flow (DCF) Method/

**The Discounted Cash Flow (DCF) method** is a **valuation technique** that **estimates all expected future cash flows over a defined analysis period** and **converts** them into a **present value** using *a discount rate that reflects risk and the required rate of return.*

$$V = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} + \frac{TV}{(1+r)^n}$$

| Symbol          | Meaning                       |
|-----------------|-------------------------------|
| V               | Present value of the property |
| CF <sub>t</sub> | Cash flow in year t           |
| r               | Discount rate                 |
| n               | Analysis period (years)       |
| TV              | Terminal (reversionary) value |

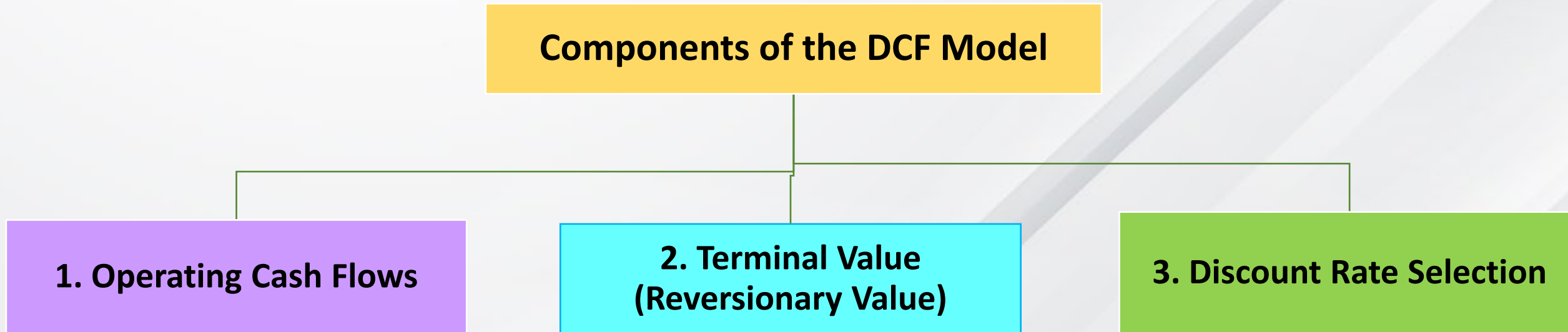
## 2.Income Approach

### ➤ Conditions for Applying DCF

| Condition                            | Description                                                |
|--------------------------------------|------------------------------------------------------------|
| <b>Variability of cash flows</b>     | Income is not constant and varies over time                |
| <b>Analysis period</b>               | Suitable for development projects or long-term investments |
| <b>Availability of detailed data</b> | Detailed information on rents, costs, and occupancy        |
| <b>Reliable discount rate</b>        | Derived from the market or adjusted for risk               |
| <b>Clear assumptions</b>             | Growth, occupancy, and inflation expectations              |

## 2.Income Approach

### ➤ Components of the DCF Model



## 2. Income Approach

### ➤ Components of the DCF Model

#### 1. Operating Cash Flows

$$\text{PGI} = \sum \text{Market Rent for all units}$$

$$\text{Vacancy \& Collection Loss} = \text{PGI} \times \text{Vacancy Rate}$$

$$\text{EGI} = \text{PGI} - \text{Vacancy \& Collection Loss}$$

$$\text{Total Effective Income} = \text{EGI} + \text{Other Income}$$

$$\text{NOI} = \text{Total Effective Income} - \text{Operating Expenses}$$

$$\text{Free Cash Flow} = \text{NOI} - \text{Capital Expenditure (CapEx)}$$

## 2. Income Approach

### ➤ Components of the DCF Model

#### 2. Terminal Value (Reversionary Value)

The value of a property at the end of the analysis period (typically 5–10 years) within a **Discounted Cash Flow (DCF)** model.

1 Exit Yield Method (Direct Capitalization)

2 Exit Multiple Method

## 2. Income Approach

### ➤ Components of the DCF Model

#### 2. Terminal Value (Reversionary Value)

##### 1 Exit Yield Method (Direct Capitalization)

The method involves **capitalizing the income of the year following the end of the analysis period** into a single capital value using an appropriate terminal capitalization rate.

$$TV = \frac{NOI_{n+1}}{R_{terminal}}$$

TV = Terminal Value

NOI<sub>n+1</sub> = Net Operating Income in the year immediately following the analysis period

R<sub>terminal</sub> = Terminal Capitalisation Rate (Exit Yield)

When is it  
used?

Most commonly applied in real estate valuation practice

When market-derived capitalization rates are available

Fully consistent with EVS and RICS guidance

## 2. Income Approach

### ➤ Components of the DCF Model

#### 2. Terminal Value (Reversionary Value)

##### 1 Exit Yield Method (Direct Capitalization)



**Example:**

Assume:

- NOI in Year 10 = 2,000,000
- SAR Growth rate = 3%
- Terminal capitalization rate = 8%

#### Step 1: Estimate NOI for Year 11

$$NOI_{11} = 2,000,000 \times (1 + 0.03) = 2,060,000$$

$$TV = \frac{NOI_{n+1}}{R_{terminal}}$$

$$TV = \frac{2,060,000}{0.08} = 25,750,000 \text{ SAR}$$

## 2. Income Approach

### ➤ Components of the DCF Model

#### 2. Terminal Value (Reversionary Value)

#### 2 Exit Multiple Method

The property value is estimated by applying a **market-based income multiple** to the final year's income.

$$TV = NOI_n \times \text{Exit Multiple}$$

$NOI_n$  = Net Operating Income in the final year of the analysis period

**Exit Multiple** = Market-derived multiple (e.g., 10×, 12×)

When is it  
used?

Investment analysis

Financial markets

Business valuation

Less commonly used in  
traditional real estate  
valuation compared to the  
Exit Yield Method

## 2. Income Approach

### ➤ Components of the DCF Model

#### 2. Terminal Value (Reversionary Value)

#### 2 Exit Multiple Method

 **Example:**

Assume:

- NOI in Year 10 = 2,000,000 SAR
- Exit Multiple = 12

$$TV = NOI_n \times Exit\ Multiple$$

$$TV = 2,000,000 \times 12 = 24,000,000\ SAR$$

#### Comparison Between the Two Methods

| Criterion       | Exit Yield Method               | Exit Multiple Method      |
|-----------------|---------------------------------|---------------------------|
| Basis           | Capitalization Rate (Yield)     | Market Multiple           |
| Accuracy        | Higher in real estate valuation | Relatively lower          |
| Market reliance | Strong                          | Moderate                  |
| Usage           | Most common                     | Complementary / secondary |

## 2.Income Approach

### ➤ Components of the DCF Model

#### 3. Discount Rate Selection

| Component                  | Description                         |
|----------------------------|-------------------------------------|
| Risk-free rate             | Government bond yield               |
| Property risk premium      | Based on property type and location |
| Liquidity premium          | Reflects difficulty of disposal     |
| Management premium         | Reflects operational complexity     |
| <b>Total discount rate</b> | <b>Sum of all components</b>        |

## 2.Income Approach

### ➤ Steps in Applying the DCF Model

**Step 1: Define the analysis period (typically 5–10 years)**

**Step 2: Forecast annual cash flows**

**Step 3: Determine the discount rate**

**Step 4: Calculate present value of each cash flow**

**Step 5: Estimate terminal value**

**Step 6: Discount the terminal value**

**Step 7: Sum all present values to derive property value**

**Step 8: Perform sensitivity analysis and validate results**

## 2.Income Approach

### ➤ Comprehensive Numerical Example – The DCF Model

#### Property Data

| Item                         | Details              |
|------------------------------|----------------------|
| Property Type                | Shopping Centre      |
| Analysis Period              | 10 years             |
| NOI (Year 1)                 | SAR 2,000,000        |
| Annual Growth Rate           | 3%                   |
| Capital Expenditure (CapEx)  | SAR 150,000 annually |
| Discount Rate                | 10%                  |
| Terminal Capitalization Rate | 8%                   |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – The DCF Model

**Discounted Cash Flow Table:**

| Year                          | NOI       | CapEx     | Net CF    | Discount Factor (10%) | Present Value     |
|-------------------------------|-----------|-----------|-----------|-----------------------|-------------------|
| 1                             | 2,000,000 | (150,000) | 1,850,000 | 0.9091                | 1,681,835         |
| 2                             | 2,060,000 | (150,000) | 1,910,000 | 0.8264                | 1,578,424         |
| 3                             | 2,121,800 | (150,000) | 1,971,800 | 0.7513                | 1,481,583         |
| 4                             | 2,185,454 | (150,000) | 2,035,454 | 0.6830                | 1,390,215         |
| 5                             | 2,251,018 | (150,000) | 2,101,018 | 0.6209                | 1,304,542         |
| 6                             | 2,318,549 | (150,000) | 2,168,549 | 0.5645                | 1,223,122         |
| 7                             | 2,388,105 | (150,000) | 2,238,105 | 0.5132                | 1,148,568         |
| 8                             | 2,459,748 | (150,000) | 2,309,748 | 0.4665                | 1,077,497         |
| 9                             | 2,533,541 | (150,000) | 2,383,541 | 0.4241                | 1,010,644         |
| 10                            | 2,609,547 | (150,000) | 2,459,547 | 0.3855                | 948,154           |
| <b>Total PV of Cash Flows</b> |           |           |           |                       | <b>12,844,584</b> |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – The DCF Model

#### Terminal Value Calculation:

| Item                      | Calculation                | Value      |
|---------------------------|----------------------------|------------|
| NOI (Year 11)             | $2,609,547 \times 1.03$    | 2,687,833  |
| Terminal Value (TV)       | $2,687,833 \div 8\%$       | 33,597,913 |
| Discount Factor (Year 10) | $(1.10)^{10}$              | 0.3855     |
| Present Value of TV       | $33,597,913 \times 0.3855$ | 12,952,045 |

#### Total Property Value:

| Item                 | Value (SAR)      |
|----------------------|------------------|
| PV of Cash Flows     | 12,844,584       |
| PV of Terminal Value | 12,952,045       |
| Total Market Value   | 25,796,629       |
| Rounded Value        | ≈ SAR 25,800,000 |

## 2.Income Approach

### ➤ Comprehensive Numerical Example – The DCF Model

#### Sensitivity Analysis:

| Discount Rate | Growth Rate | Estimated Value | Change |
|---------------|-------------|-----------------|--------|
| 9%            | 3%          | 28,450,000      | +10.3% |
| 10%           | 3%          | 25,800,000      | Base   |
| 11%           | 3%          | 23,500,000      | -8.9%  |
| 10%           | 2%          | 24,200,000      | -6.2%  |
| 10%           | 4%          | 27,600,000      | +7.0%  |

**The sensitivity analysis** indicates that a **1% change in the discount rate** may impact the valuation by approximately **9–10%**, highlighting the critical importance of accurately determining the discount rate in DCF modelling.

## 2.Income Approach

### ➤ Comparison Between Direct Capitalization and Discounted Cash Flow (DCF)

| Criterion                   | Direct Capitalization                                                                                                                                                                   | Discounted Cash Flow (DCF)                                                                                                                                              |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Simplicity</b>           | Simpler and quicker                                                                                                                                                                     | More complex                                                                                                                                                            |
| <b>Type of Income</b>       | Stable and consistent income                                                                                                                                                            | Variable or evolving income                                                                                                                                             |
| <b>Analysis Period</b>      | At a single point in time; does not analyze cash flows year by year, but instead converts future income into a single current value using one income figure and one capitalization rate | Multi-period analysis (typically 5–10 years); each year is modelled separately, with each cash flow discounted individually, incorporating growth and changes over time |
| <b>Transparency</b>         | Less detailed                                                                                                                                                                           | More transparent                                                                                                                                                        |
| <b>Sensitivity</b>          | Less sensitive to assumptions                                                                                                                                                           | Highly sensitive to assumptions                                                                                                                                         |
| <b>Typical Use</b>          | Stabilized income-producing commercial properties                                                                                                                                       | Hotels, development projects, and property portfolios                                                                                                                   |
| <b>RICS (2023) Guidance</b> | Still acceptable                                                                                                                                                                        | Increasingly encouraged                                                                                                                                                 |
| <b>IVS (2024) Guidance</b>  | Appropriate when income is stable                                                                                                                                                       | Appropriate for variable cash flows                                                                                                                                     |

## 2.Income Approach

### ➤ Challenges and Mitigation Measures

| Challenge                                        | Description                                                      | Recommended Solution                                                                                                      |
|--------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Forecasting future income</b>                 | Difficulty in predicting rental levels and income stability      | Use current market rents, apply averages, and develop multiple scenarios (e.g., optimistic, base case, conservative)      |
| <b>Lack of market data</b>                       | Insufficient or unreliable data availability                     | Rely on market evidence, valuers' reports, and real estate databases                                                      |
| <b>Determining capitalization/discount rates</b> | Absence of a single observable rate and difficulty in estimation | Derive rates from comparable sales and apply multiple validation techniques (e.g., Market Extraction, Band of Investment) |
| <b>DCF model sensitivity</b>                     | Results are highly dependent on assumptions                      | Conduct sensitivity analysis and scenario testing                                                                         |
| <b>Estimating vacancy rates</b>                  | Occupancy levels fluctuate over time                             | Use historical market averages and analyze supply and demand trends                                                       |

## 2.Income Approach

### ➤ Challenges and Mitigation Measures

| Challenge                                 | Description                                    | Recommended Solution                                                      |
|-------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|
| <b>Operating and capital expenditures</b> | Uncertainty and difficulty in estimating CapEx | Include appropriate annual reserves and base estimates on historical data |
| <b>Terminal Value estimation</b>          | Significant impact on the final valuation      | Cross-check using multiple methods (e.g., Exit Yield, Growth Model)       |
| <b>Interest rate fluctuations</b>         | Direct impact on discount rates and value      | Perform scenario analysis for different interest rate environments        |

## 3. Cost Approach

### ➤ The Definition According to the Three International Standards

#### **IVS 2024**

**“The cost approach provides an indication of value using the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or construction.”**

#### **RICS Red Book 2023**

**“The cost approach provides an indication of value using the principle that the price a buyer would pay for the asset would not exceed the cost of acquiring or constructing an equivalent asset.”**

#### **EVS 2020 – TEGOVA**

**“The cost approach is based on the principle of substitution, whereby the value of a property is derived from the cost of replacing it with an equivalent property, adjusted for depreciation.”**

## 3. Cost Approach

### ➤ Core Concept of the Cost Approach

**Value = Land Value + Replacement Cost – Depreciation**

**A rational buyer will not pay more than the cost to construct an equivalent asset**

**The Principle of Substitution is the theoretical basis**

## 3. Cost Approach

### ➤ Fundamental Principles of the Cost Approach

#### Fundamental Principles of the Cost Approach

➤ Principle 1: Substitution

➤ Principle 2: Balance

➤ Principle 3: Highest and Best Use

## 3. Cost Approach

### ➤ Fundamental Principles of the Cost Approach

#### ➤ Principle 1: Substitution

| Concept    | Application                                                                                                |
|------------|------------------------------------------------------------------------------------------------------------|
| Basis      | A rational purchaser will not pay more than the cost of acquiring or constructing an equivalent substitute |
| Constraint | The substitute must provide the same utility                                                               |
| Timing     | Without unreasonable delay                                                                                 |

## 3. Cost Approach

### ➤ Fundamental Principles of the Cost Approach

#### ➤ Principle 2: Balance

Optimal value is achieved when the components of the property are in proper proportion:

*Land : Buildings : Improvements*

#### ➤ Principle 3: Principle 3: Highest and Best Use

| Factor            | Impact                            |
|-------------------|-----------------------------------|
| Current use       | May not represent the optimal use |
| Alternative uses  | Influence land value              |
| Legal constraints | Limit available options           |

## 3. Cost Approach

### ➤ Conditions for Applying the Cost Approach

| Condition                                             | Description                                                                                  | Requirements                                                                             |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>1. Applicability of the Substitution Principle</b> | The asset must be capable of being replaced by an equivalent asset providing similar utility | Availability of a feasible substitute that can be constructed or acquired                |
| <b>2. Availability of Cost Data</b>                   | Reliable information on construction or replacement costs must be available                  | Up-to-date data on materials, labour, and construction costs                             |
| <b>3. Ability to Estimate Depreciation</b>            | All forms of depreciation must be measurable                                                 | Assessment of physical deterioration, functional obsolescence, and economic obsolescence |
| <b>4. Separate Valuation of Land</b>                  | Land value must be assessed independently from improvements                                  | Use of the market (sales comparison) approach to value land                              |
| <b>5. Nature of the Asset (Specialized Property)</b>  | Applied when market or income data is limited or unavailable                                 | Rarely traded properties (e.g., hospitals, schools, industrial facilities)               |

## 3. Cost Approach

### ➤ When is the Cost Approach Applied?

| Situation                                     | Rationale                                    | Examples                                 |
|-----------------------------------------------|----------------------------------------------|------------------------------------------|
| <b>Specialized properties</b>                 | Lack of comparable market evidence           | Hospitals, schools, power plants         |
| <b>Public and government properties</b>       | Not typically traded in the open market      | Government buildings, embassies          |
| <b>New or recently constructed properties</b> | Cost is a good proxy for market value        | Newly completed developments (0–5 years) |
| <b>Insurance purposes</b>                     | To estimate replacement/reinstatement cost   | Fire insurance valuations                |
| <b>Absence of income</b>                      | Income approach cannot be applied            | Government buildings, schools            |
| <b>Financial reporting (IFRS)</b>             | Required for specialised assets valuation    | Factories, plant and equipment           |
| <b>Taxation disputes</b>                      | To support objections to assessed values     | Property tax appeals                     |
| <b>Emerging or inactive markets</b>           | Limited availability of reliable market data | Remote or underdeveloped areas           |

## Lecture Summary: Quick Review

### Income Approach

The Definition According to the Three International Standards

Fundamental Principles of the Income Approach

Conditions for Applying the Income Approach

Suitability for the Application of the Income Approach

Income Approach Methods

Challenges and Mitigation Measures

### Cost Approach

The Definition According to the Three International Standards

Fundamental Economic Principles

When is the Cost Approach Applied?



Thank You