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Application of Discounted Cash Flow Method for Financial Institutions

1. Preamble

Under banking norms, assets can be classified under two basic groups- secured assets and unsecured assets.

1.1. Secured assets are items of value pledged as collateral to secure a loan or credit facility. If the borrower defaults on the loan, the lender can seize and sell the secured asset to recover the outstanding debt. Essentially, the asset acts as a guarantee for the lender, reducing their risk. Income fetching assets (marketable) assets falls under the category of secured assets.

Examples: Rented residential viz. independent houses, apartment flats, / commercial like shops, offices, vacant freehold lands, hotels, cinemas, malls, petrol pumps, industrial assets, leased / leave and License / Right to use assets

1.2. Unsecured assets, or unsecured debt, refers to financial obligations (like loans or investments) that are not backed by any specific collateral, such as a house or car. Instead, the lender's repayment is based on the borrower's creditworthiness and ability to repay. These assets lack in marketability and enforceability. The income fetching / non-income fetching non-marketable assets falls under the category of unsecured assets.

Examples of income fetching non-marketable assets: Title defects assets, minor-held assets, disputes under courts jurisdictions, leased freehold assets

Examples of non-income fetching non-marketable assets: Religious building viz. temples, churches, mosques, public buildings viz. library, museum, fire station, and all central and state owned government buildings, institutional buildings viz. schools, colleges, hospitals running on commercial basis either as trust properties or individual properties as income/ profit earning assets.

2. Valuation approaches for the above assets

The assets marked above, will have different characteristics and market value under circumstances of attributes like location, shape, size and others. Hence, different valuation approaches are required for in estimation on asset value. The financial institutions while providing financial assistance to the borrowers make sure of the asset present and future value.

3. Secured mortgage lending value

This mortgage lending value is derived from the present and future marketability of the asset, in attention to long term sustainable aspects under normal and local market conditions. Due review is provided for the current use and alternate appropriate use of the asset. It is therefore expected by the financial institution, that this secured mortgage lending value must withstand short term market fluctuations. This is highly useful for the financial institution on loans secured.

Hence, the financial institution requires valuation under the following approaches:

(i) Income approach – Approach generally applied to value income fetching assets

(ii) Market approach.- Approach generally applied for marketable assets, both income fetching and non- income fetching assets

4. Time value of money

The time value of money is defined as the economic principle that a **Rupee** received today has greater value than a **Rupee** received in the future. The intuition behind the time value of money is easy to see with a simple example. Suppose you were given the choice between receiving Rupees 100,000 today or Rupees 100,000 after 10 years. Clearly, the first option is more valuable for the following reasons:

No Risk – There is no risk with getting money back that you already have today.

Higher Purchasing Power – Because of inflation, in comparison to the purchasing power will be more on today than purchasing power after 10 years and vice versa - purchasing power will be less on toady than purchasing power before 10 years.

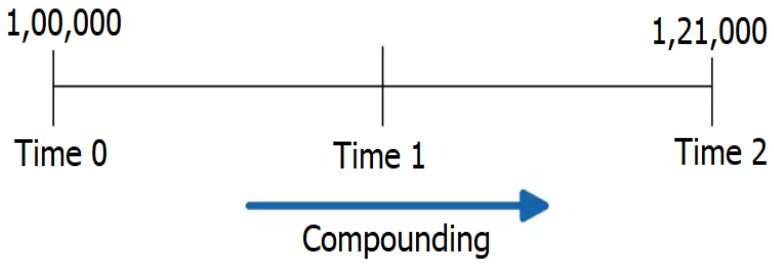
Opportunity cost – A rupee received today can be invested now to earn interest, resulting in a higher value in the future. In contrast, a rupee received in the future cannot begin earning interest until it is received. This lost opportunity to earn interest is the opportunity cost. (ie) More is better than less or sooner is better than later.

5. Compounding and discounting techniques

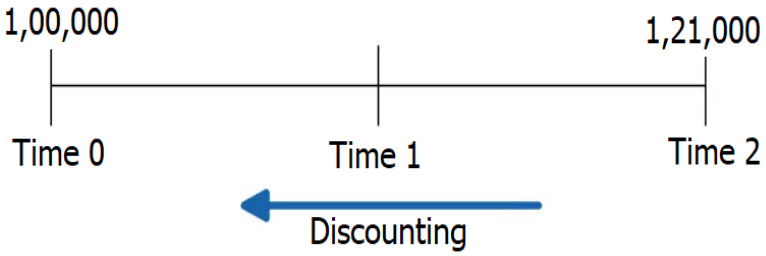
All time value of money problems involve two fundamental techniques: compounding and discounting. Compounding and discounting is a process used to compare money received today versus money to be received at some time in the future.

Compounding is about moving money forwards in time. It's the process of determining the future value of an investment made today and/or the future value of a series of equal payments made over time (periodic payments).

For example, in the illustration 100,000 is invested at time 0 and grows at a 10% rate to 121,000 at time 2. The initial investment compounds because it earns interest on the principal amount invested, plus it also earns interest on the interest.



Discounting is about moving money backwards in time. It's the process of determining the present value of money to be received in the future (as a lump sum and/or as periodic payments). Present value is determined by applying a discount rate (opportunity cost) to the sums of money to be received in the future.



The intuition behind discounting- When solving for the future value of money set aside today, we compound our investment at a particular rate of interest. When solving for the present value of future cash flows, the problem is one of **discounting**, rather than **growing**, and the required expected return acts as the **discount rate**. In other words, discounting is merely the inverse of growing. The 5 components of all time value of money problems are as follows:

Periods (n). The total number of compounding or discounting periods in the holding period.

Rate (i). The periodic interest rate or discount rate used in the analysis, usually expressed as an annual percentage.

Present Value (PV). Represents a single sum of money today.

Future Value (FV). A one-time single sum of money to be received or paid in the future.

Present Value / discount rate	**C X** $\frac{1}{(1+R)^n}$
Amount of Re 1 per Annum	**C X** $\frac{((1+R)^n-1)}{R}$
Gross Sinking Fund	**C x** $\frac{R}{(1+R)^n-1}$
Present value of future income Single rate	**C x** $\frac{1-\frac{1}{(1+R)^n}}{R}$
Present value of future income (Dual rate)	$\frac{1}{R+S}$

6. Average of cumulative rental yield

Rental yield is typically calculated on an annual basis, and it's the annual rental income expressed as a percentage of the property's value. To understand consider the related points:

1. Averaging Rental Yields over Time: Calculate the annual rental yield for each of the last 5 years and then find the average of those yields. This would give a typical or expected return on investment from the property over a longer period, considering any fluctuations in rental income or property value.

2. Cumulative Rental Yield as a Percentage of Investment: Calculate the cumulative rental income and express it as a percentage of the initial investment. This metric would show the total return earned from the property in terms of the initial cost, and it's a way to track the overall profitability.

3. Understanding Rental Yield: Gross Rental Yield: This is calculated by dividing the annual rental income by the property's value.

Net Rental Yield: This is a more comprehensive metric that also considers operating expenses (like maintenance, property taxes, and insurance).

Illustration: For residential house/ flat apartment the average of cumulative rental yield varies from 2% (Urban / semi urban) to 4% (Metros) depending on the location. For office, shops, commercial malls etc. the yield varies from 4% (Urban / semi urban) to 6% (Metros).

7. Rent Capitalization method

This method fall under the income approach method - income capitalisation, where a fixed yield rate is applied to a fixed income stream. It is also, assumed that annual income of the property will remain same during the entire economic life of the property. Hence 1st year's annual income is taken as annual income for entire economic life of the property.

Net Maintainable Rent (NMR) =

Gross Maintainable Rent (GMR) – Outgoes (OG)

Formula: Capitalised Value = Net income x YP.

Years' purchase (YP)

In valuations by the investment method, the factor by which the net income is multiplied to arrive at capital value is called Years' Purchase (YP). It is the present value of Re.1 per annum for n number of years at a certain rate of interest and is the reciprocal of the annuity Re. 1 will purchase.

8. Discounted Cash Flow Method

Compared to traditional valuation techniques (Rent capitalization method otherwise called income capitalization method) that consider just a single point in time forecast, the effects of cash flow differences between scenarios that occur over several years can be valued. Discounting techniques are based on the accepted economic principle that the value of an asset is represented by the cumulative present value of the future cash flows received by the asset holder. The cash flows are brought into present value terms by using a factor based on the discount rate.

The advantage of a DCF valuation is that it allows the free cash flows that occur in all future years to be valued giving the 'true' or 'intrinsic' value of the business.

The disadvantage is that it requires accurate forecasts of future free cash flows and discount rates. The accuracy of this calculation is not only a function of the method used and the underlying assumptions, but also the level of cash flow at the end of the explicit forecast period.

9. Cash flow method procedure

(a) selecting the most suitable type of cash flow required for the asset and the assignment (ie, pre-tax or post-tax, total cash flows or cash flows to equity, real or nominal, etc),

(b) determine the most appropriate explicit period, if any, over which the cash flow will be forecast,

(c) prepare cash flow forecasts for that period,

(d) determine whether a terminal value is appropriate for the subject asset at the end of the explicit forecast period (if any) and then determine the appropriate terminal value for the nature of the asset,

(e) determine the appropriate discount rate, and

(f) apply the discount rate to the forecasted future cash flow, including the terminal value, if any.

10. Assumptions made while applying DCF method

1. The cash flow can be pre-tax or post-tax

2. Type of cash flow: a cash flow forecast may represent expected cash flows, ie, probability-weighted scenarios), most likely cash flows, contractual cash flows, etc.

3. Nominal interest rate: The nominal interest rate is the rate of interest charged or earned on a loan or investment before accounting for the effects of inflation or other factors.

4. Real interest rate: The real interest rate is calculated by adjusting the nominal interest rate for the effects of inflation.

5. Nominal cash flows represent the actual monetary inflows and outflows of a business or project, expressed in the currency of the period.

Nominal cash flows don't account for inflation, meaning the purchasing power of that money might be different in the future.

6. Real cash flows are nominal cash flows adjusted for inflation to reflect their true purchasing power in terms of goods and services.

Real cash flows are helpful for comparing cash flows across different periods and understanding the true value of a business or project over time.

7. Cash flow for the forecast period is constructed using prospective financial information (investor’s balance sheet) (projected income/inflows and expenditure/outflows). The cash flow is divided into suitable periodic intervals (eg, weekly, monthly, quarterly or annually) with the

choice of interval depending upon the nature of the asset, the pattern of the cash flow, the data available, and the length of the forecast period.

8. Amortization is the accounting practice of spreading the cost of an intangible asset over its useful life. Intangible assets aren't physical but they're still assets of value. They can include patents, trademarks, franchise agreements, copyrights, costs of issuing bonds to raise capital, and organizational costs.

Accounting non-cash expenses, such as depreciation and amortization, should be added back, and expected cash outflows relating to capital expenditures or to changes in working capital should be deducted in calculating cash flow.

9. Where the asset is expected to continue beyond the explicit forecast period, valuers must estimate the value of the asset at the end of that period. The terminal value is then discounted back to the valuation date, normally using the same discount rate as applied to the forecast cash flow.

10. The explicit forecast period is the time frame where detailed, individual cash flow projections are made, typically for 3-5 years. This period is followed by the terminal value, which represents the value of the company's cash flows beyond the explicit forecast.

(a) the life of the asset,

(b) a reasonable period for which reliable data is available,

(c) the minimum explicit forecast period which should be sufficient for an asset to achieve a stabilized level of growth and profits, after which a terminal value can be used,

(d) in the valuation of cyclical assets, the explicit forecast period should generally include an entire cycle, when possible, and

(e) for finite-lived assets such as most financial instruments, the cash flows will typically be forecast over the full life of the asset.

Table 1: Calculating cash flow	
	Components of cash flow
Add back	Depreciation
Add back	Other non-cash items (amortization, change in provisions)
(Less)/add back	(Increase)/decrease in operating working capital
Less	Capital expenditure

Less (add back)	Currency variations (if positive)
Less (add back)	Other income (if positive) Pre-tax cash flow
Less	Net interest paid (cash net interest as opposed to P&L net)
Add back	Tax shield resulting from interest payments

11. Cap Rate

The capitalization rate, is a real estate investment metric that estimates the potential return on an investment property. It's calculated by dividing the property's annual net operating income (NOI) by its current market value. The result is expressed as a percentage and represents the expected annual return on the investment.

Formula**:**

Capitalization Rate = Net Operating Income (NOI) / Current Market Value.

In Build-up method the Cap Rate is built up from risk free rates of Govt. Bonds (gilts) by adding risks associated with various aspects / nature of the asset under consideration. This is a subjective method of estimating the cap rate.

Build up Cap Rate = Risk free rate + non liquidity rate (due to nature of real estate, as it cannot be liquidated immediately) + risk premium (associated with real estate in general and also asset specific risk) + growth recapture {adjustment for appreciation (-ve) / depreciation (+ve) in capital value}.

12. Discount Rate

The discount rate refers to the interest rate applied to determine the present value of future cash flows. It can also denote the rate charged by financial institutions for short-term loans or the rate applied in economic models to account for decreasing utility over time.

The discount rate at which the forecast cash flow is discounted should reflect not only the time value of money, but also the risks associated with the type of cash flow and the future operations of the asset.

13. Method for developing an appropriate discount rate.

(a) a capital asset pricing model (CAPM),

(b) a weighted-average-cost-of-capital CNACC),

(c) observed or inferred rates/yields,

(d) a build-up method.

The valuer should consider supporting analyses when assessing the relevance of a discount rate. (e) an internal rate of return (IRR),

(f) a weighted average return on assets (WARA),

(g) value indications from other approaches, such as market approach, or comparing implied multiples from the income approach with guideline company market multiples or transaction multiples.

14. Capital Asset Pricing Model (CAPM)

In finance, the Capital Asset Pricing Model (CAPM) is a model that describes the relationship between the expected return of an investment and its risk. It helps determine the required rate of return of an asset and can be used for investment decisions.

Essentially, CAPM proposes that the expected return on an asset is equal to the risk-free rate plus a risk premium. The risk premium is determined by the asset's beta, which measures its volatility relative to the overall market.

Purpose: CAPM aims to price securities and determine expected investment returns. It helps investors assess risk-adjusted returns and make informed investment choices.

Formula:

The CAPM formula is: Ra = Rrf + [Ba x (Rm – Rrf)].

Ra: Expected rate of return on the asset.

Rrf: Risk-free rate of return (e.g., the yield on government bonds).

Ba: Beta of the asset (a measure of its volatility compared to the market).

Rm: Expected rate of return of the market.

Beta: Beta measures the asset's systematic risk, or the extent to which it moves in line with the market. A beta of 1 indicates the asset's price moves in line with the market, while a beta greater than 1 suggests it's more volatile and a beta less than 1 suggests it's less volatile.

Assumptions: CAPM relies on several assumptions, including perfect markets, rational investors, and a single investment period.

Limitations: While a valuable tool, CAPM has limitations. It may not perfectly reflect real-world investment conditions due to its assumptions and the difficulty of accurately predicting future returns and risk premiums.

Beta risk, also known as market risk or systematic risk, refers to the volatility or price fluctuation of a security or portfolio compared to the overall market. It's the part of an investment's risk that cannot be diversified away by adding more assets to a portfolio. In essence, beta measures how sensitive a security's returns are to changes in the market.

Here's a more detailed explanation:

Systematic vs. Nonsystematic Risk:

Beta risk is considered systematic risk, meaning it's inherent in the market and affects all investments. Conversely, nonsystematic (or diversifiable) risk refers to the risk specific to individual companies or industries, which can be reduced through diversification.

Beta as a Measure of Volatility:

A beta of 1 indicates that a security's price tends to move in line with the overall market. A beta greater than 1 suggests the security is more volatile than the market (it tends to rise or fall more dramatically), while a beta less than 1 indicates lower volatility.

High Beta vs. Low Beta:

High-beta stocks are generally considered riskier but offer the potential for higher returns, while low-beta stocks are less volatile and typically offer lower returns.

Importance in Portfolio Management:

Understanding a security's beta helps investors assess its risk and tailor their portfolios accordingly. For example, investors seeking to reduce market risk might choose to invest in low-beta assets.

Use in Capital Asset Pricing Model (CAPM):

Beta is a key component of the CAPM, a model used to estimate the required return for an investment given its risk. The CAPM suggests that investors should be compensated for bearing systematic risk.

Calculating Beta:

Beta is typically calculated using regression analysis, comparing the security's historical returns to the returns of a market index. The slope of the regression line represents the beta value.

15. Weighted average cost of capital – (WACC)

This method for estimation of cap rate could be looked upon as market extraction method. For estimation of WACC cap rate, one needs to consider three aspects, namely financial structure,

cost of debt and cost of equity. When estimating market value (and not investment value for a specific investor), the financial structure and the rates (for specific asset type) based on market observation, extraction and analysis are used. It has to be noted that financial structure in such cases (for specific asset type) would indicate the proportion of debt and equity normally adopted by market participants.

16. Observed or Inferred Rates/Yields - The real interest rate is the rate of interest an investor, saver or lender receives after allowing for inflation. It can be described more formally by the Fisher equation, which states that the real interest rate is approximately the nominal interest rate minus the inflation rate.

17. Build-Up Method. The Build-Up Method is a widely recognized method of determining the after-tax net cash flow discount rate, which in turn yields the capitalization rate. The figures used in the Build-Up Method are derived from various sources.

18. Credit Risks

Banking risks encompass a variety of potential threats to a bank's financial stability and operational performance. These risks include credit risk (borrower’s default,) market risk (fluctuations in interest rates, exchange rates, and other market factors), liquidity risk (insufficient liquid funds), operational risk (inadequate or failed internal processes, systems), and compliance risk (legal & regulatory violations, leading to fines, penalties). Banks face these risks due to their lending activities, exposure to market fluctuations, and their complex operational infrastructure. Moral hazards are the risk that banks may take on excessive risks because they are insured against losses or believe they will be bailed out by the government.

Debtor risk, also known as credit risk, is the potential loss a business faces when a customer fails to pay for goods or services they've been provided on credit. This risk can lead to reduced revenue, cash flow problems, and even financial losses for the business.

Debtor risk occurs due to delay in credit payment receipt, unpaid invoices reduces revenue affecting Cash flow issues, potential for financial losses lead to mitigation strategies. If apt systems are there to credit checks, payment terms, collection efforts, credit insurance these problems can be solved.

Property risks come in many forms, from natural disasters to human-caused incidents. Focus on areas like fire hazards, flood risks, structural issues, and security weaknesses.

Investment risk in real estate refers to the possibility of a decline in property values or income due to changes in market conditions. These changes can be caused by various factors such as economic downturn, oversupply of properties, or a shift in demographic trends.

Political risk is the risk an investment's returns could suffer as a result of political changes or instability in a country. Instability affecting investment returns could stem from a change in government, legislative bodies, other foreign policymakers or military control. Political risk is also known as "geopolitical risk," and becomes more of a factor as the time horizon of investment gets longer. They are considered a type of jurisdiction risk.

Micro/ Macro risks due to the overall health of a national economy, including factors like inflation, unemployment, and GDP. Microeconomics: Analyzing the decisions of individual consumers, households, or firms and examination of the behavior of individual agents and markets. Micro risks are specific to individual entities, like a company, project, or a particular segment of the market. Micro risks can often be managed through internal controls, project management strategies, and diversification within a portfolio.

Macro risks affect a wide range of entities, encompassing broad economic, political, or social factors. A global recession impacting multiple industries. Government policies changing regulations or taxes, affecting many businesses. Political instability or civil unrest impacting an entire region. Natural disasters like earthquakes or floods affecting a large area. Macro risks are more challenging to manage and often require a broader perspective and strategic planning. Businesses may need to adapt their operations, diversify geographically, or seek government support.

19. Investor's risk:

1. Systematic Risk (Market Risk): This type of risk affects the entire market or a broad segment of it and cannot be eliminated through diversification.

- Interest rate risk: The possibility of losses due to changes in interest rates.
- Market risk: Fluctuations in the overall market or economy that can impact investment values.
- Purchasing power risk: Inflation eroding the value of investments.
- Reinvestment risk: Difficulty reinvesting cash flows at the same rate of return.

2. Unsystematic Risk (Specific Risk): This risk is specific to a particular company, industry, or investment and can be reduced through diversification.

- ❖ Business risk: Factors affecting a company's profitability, such as competition, management quality, or operational inefficiencies.
- ❖ Financial risk: The risk associated with a company's capital structure, including its debt levels.
- ❖ Credit risk: The risk that a borrower will default on their loan obligations.
- ❖ Operational risk: Losses stemming from inadequate or failed internal processes, systems, or external events.

3. Other Risk Categories:

- ➢ Strategic Risk: Concerns the long-term direction and goals of an organization, including its competitive position and market strategy.
- ➢ Compliance Risk: Relates to the risk of violating laws, regulations, or internal policies.
- ➢ Reputational Risk: The potential for damage to an organization's reputation due to negative publicity or events.
- ➢ Political/Regulatory Risk: The impact of political decisions and changes in regulations on businesses.
- ➢ Currency Risk: The potential loss from fluctuations in foreign exchange rates.
- ➢ Inflation Risk: The risk that rising prices will erode the value of investments.
- ➢ Understanding the different types of risk is crucial for:
- ➢ Making informed investment decisions: Assessing the potential for gains and losses associated with different investment options.
- ➢ Managing business operations: Identifying and mitigating potential threats to a company's profitability and success.
- ➢ Developing effective risk management strategies: Implementing measures to minimize the impact of potential losses.

20. Cost of Equity

Cost of Equity (K_e) is assessed taking in to account the operational and financial risk. Operational risk is based on asset characters. Financial risk will be on financial structure (ie) debt equity ratio. The applied method will be built up method.

1. **Risk free rate:** The average return from the Government Bonds with maturity period being similar to valuation prospect (explicit forecast period). The risk-free rate is based on the government sovereign bond. There are many arguments to support longer-dated bonds. However, provided the same bond is used to determine the risk-free rate and as part of the market premium calculation, the differences in the final value for Cost of Equity are relatively immaterial.

Sovereign bond: A sovereign bond is a debt security issued by a national government to finance its operations, repay debt, or fund infrastructure projects. Essentially, it's a loan from investors to the government, with the promise of returning the principal and paying periodic interest (coupon payments).

These bonds are considered relatively low-risk investments because they are backed by the "full faith and credit" of the issuing government, meaning the government is expected to honor its obligations Sovereign bonds are government debt securities issued by the government and are low-risk, as the government backs them. The most sought-after schemes are Sovereign Gold Bonds (SGBs), Government Securities (G-Secs), Treasury Bonds, and Green Bonds. They provide fixed income, liquidity, tax advantages, and inflation hedging.

2. Risk premium: Based on market inputs on

a. Operational risk

b. Micro & Macro market risks (property sector risks)

(i) Geo locational risk

(ii) Asset type risk

(iii) Intended use

(iv) Physical / technical risk

(v) Rental / lease / other contractual risk

c. Financial risk: The consideration of financial structure risk will mostly arise while arriving at the investment value of the asset based on a certain predetermined financial mode for the proposed transaction which will not match with the normal market financial structure

21. Cost of debt

The cost of debt is a straight-forward calculation: Cost of Debt (K_d) = Risk free rate+ debt risk premium. The debt risk premium is relatively small, at between 40bp and 120bp. For large, high-quality businesses with high interest cover a debt risk premium at the lower end of this range is appropriate and vice versa. To simplify the calculation, we use one of three risk premia:

Table 2: Estimating the debt risk premium	
Debt risk premium	**Comment**
0.40%	High-quality corporate, high interest cover, typically AA+ rated
0.80%	Average-quality corporate, average interest cover, typically A rated
1.20%	Low-quality corporate, low interest cover, typically BBB rated
Note: The above percentage is an indicative figure only. There is no hard and fast rule to adopt the same.	

22. Discount Rate –WACC Formula

Cost of equity: K_e is estimated taking into account the property risk (operational risk) and financial risk (financial structure – debt / equity ratio).

E% = % of Equity

Cost of debt: K_d is mortgage constant or annual equivalent. Cost of debt, K_d is normally based on market observations for the interest rates charged by a typical financial institution for loans of various tenures.

D% = % of Debt

Discount Rate –WACC = Kd x D% + Ke x E%

The procedure normally followed is to estimate the cost of debt for tenure of loans which are of similar time span as the explicit forecast period. For example if the explicit forecast period for DCF is for 10 years, then one should find out the cost of debt for a loan of 10 years period by a typical financial institution.

The method adopted for estimation of cost of equity is the build-up method. The build-up method forces the valuer to focus his attention on various risk components and their degree of importance.

The valuer is forced to explain his choices and the route he has adopted while building the discount rate. The route chosen is normally first to arrive at risk free rate, to which are added the risk components (in terms of rate) which affect the asset under consideration. The weighing of the risk components thus becomes a very important task and ultimately has a bearing on the efficacy and acceptability of the discount rate arrived.

A consistency check whereby the estimated discount rate is compared to the rate of return on alternative forms of investment such as bonds or shares or to the actual or estimated returns from other properties is an important step.

As discussed earlier the cost of equity depends on the operating risk, the cost of debt and the financial structure of the transaction. This discount rate is not a constant factor and will be changing periodically based on RBI Repo Rate.

23. RBI Repo Rate

When we need money, we approach banks for loans, which charge us interest. Similarly, when banks are short of funds, they borrow money from the RBI, and the interest rate they pay is called the Repo Rate. For this borrowing, banks provide collateral in the form of their own Government Securities.

As of June 6th, 2025, the RBI had announced a 25 bps reduction in the repo rate, bringing it down to 5.50%. This is a third straight cut by the Monetary Policy Committee (MPC) this year, followed by a similar reduction in April 2025.

Date	Repo Rate
6 June 2025	5.5%
9 April 2025	6%
7 February 2025	6.25%
6 December 2024	6.5%
9 October 2024	6.5%

8 August 2024	6.5%
7 June 2024	6.5%
5 April 2024	6.5%

Note: It is worth noting that WACC formula can also be used to estimate **Cap Rate**, on the other hand in such cases equity cap rate (ke) is extracted from market observations based on the immediate rate of return.

However extracting ke from market observations is quite difficult as normally information is not available regarding the financial structure of a transaction and also the rate and tenure of borrowing through which it was financed.

24. Calculating discounted value

In developing a discount rate, it may be appropriate to consider the impact the asset's unit of account has on unsystematic risks and the derivation of the overall discount rate.

For example, the valuer should consider whether market participants would assess the discount rate for the asset on a stand-alone basis, or whether market participants would assess the

asset in the context of a broader portfolio and therefore consider the potential diversification of unsystematic risks.

A cash flow forecast of, preferably, five years or more should be used and this needs to be brought into present value terms by using the discounting technique.

Value that occurs beyond this explicit forecast period is approximated by a terminal value calculation and this too needs to be discounted to present value terms.

This discounting process is shown below:

$$(V) = \frac{\text{FCFF1}}{(1+\text{W})} + \frac{\text{FCFF2}}{(1\ +\ \text{W})2} + \frac{\text{FCFF3}}{(1\ +\ \text{W})3} + \frac{\text{FCFF4}}{(1\ +\ \text{W})4} + \frac{\text{FCFF5}}{(1\ +\ \text{W})5} + \frac{\text{TV5}}{(1\ +\ \text{W})5}$$

In calculating discounted value, the discounting process above **(V)** is the Capitalized Value, (**FCFF)** represents the free cash flow to the firm (ie cash flow after capex and after tax but before interest and dividend) and the subscript denotes the year in which it occurs, **'W** ' denotes the weighted cost of capital and **'TV'** denotes the terminal value.

In the example given above, the terminal value is the value in year five based on the cash flow (or earnings, or dividend, etc) in year six and beyond and this is why the discount rate is raised to the power of five. The valuation given above pre-supposes that the first cash flow forecast occurs 12 months from the date of the valuation.

25.0. Case study

Warehouse space in Block No II, building measuring 123267 square feet (121350 sqft warehouse+1730 sqft driver rest room & canteen +187 sqft security room) at Palladam Road, Coimbatore had been given under lease to a Bombay Firm., together with dedicated open parking area of 17577 sqft and open space of 47503 sqft which amounts to total leased space of 1,88,347 sqft (leased area) and corresponding chargeable area of 1,31,896 sqft (chargeable area) along with agreed specifications more particularly described. The lessor hereby grants on lease the warehouse leased area to the lessee and the lessee hereby accept and take on lease the demised premises for a lease period of 6 years (term).

The lease will be automatically will be terminated on the expiry of said term unless extended by the lessee up to a maximum total period of 15 years term.

The lessor will allot designated car/ truck parking slots. The lessor shall provide 130KVA EB power and common water connection. The lessor shall provide basic amenities like toilets and bath rooms. The lessor shall provide a common security at the entrance.

25.1. Fair market value by market approach method

Mr --------, Registered Valuer had inspected the property and has valued the asset by market approach method. The fair market value of the above mentioned warehouse is arrived at Rupees 44,45,00,000 and the Forced Sale Value is Rupees 40,00,00,000.

LEASE RENT CHART

Lease Commencement Date/ Possession Date	8th May 2023	
Final Handover Date	21st June 2023	
Rent Commencement Date	6th August 2023	
YOY escalation	4%	
Chargeable Area	131,896	sq.ft.

Period	Rent/sq.ft./month (in Rs.)	Rental/month (in Rs.)
6th August 2023 to 5th August 2024	19.90	2,624,730
6th August 2024 to 5th August 2025	20.70	2,729,720
6th August 2025 to 5th August 2026	21.52	2,838,908
6th August 2026 to 5th August 2027	22.38	2,952,465
6th August 2027 to 5th August 2028	23.28	3,070,563
6th August 2028 to 7th May 2029	24.21	3,193,386

Annexure 1

S No.	Description	Proposal
	Area Calculation	
1	GF	Area Break up- i) Warehouse area - 1,21,350 sq.ft. ii) Drivers restroom+ Workers canteen+Workers Toilets - 1730 sq.ft. iii) Security Room - 187 sq.ft. Total Area : 1,23,267 sq.ft. (subject to joint measurement at the time of handover)
2	Mezz	Mezz not req, canteen need to be shifted any other area
3	Canopy	Included in the Built Up Area
4	Total BUA Consideration	7% loading considered
5	Chargeable Area Consideration	Total BUA chargeable is - 1,31,896 sq. ft.
	Lease Terms	
6	Chargeable Area (in sq.ft.)	Total BUA chargeable is - 1,31,896 sq. ft.
7	Monthly Rental (INR/per sq.ft.)	Rs 19.90/sqft/month
8	Mezzanine Area (in sq.ft.)	Not applicable
9	Monthly Mezzanine Rental (INR/per sq.ft.)	Not applicable
10	Lock in (in years)	3 years (from Rent commencement date)
11	Dry Access Period (if any)	1.5 months
12	Rent Free Period (in months)	1.5 months
13	Lease Term (in years)	6 years
14	Escalation (Per Annum)	4% YoY
15	IFSD (in months)	6 months (50% payable on signing of Lease agreement Balance 50% payable on possession/handover)
16	CAM (in INR/per sq.ft.)	Shall be part of rentals (Sl no.7)
17	Stamp Duty	50:50:00
18	Notice Period (Lessor)	Nil (Lessor can give Notice to Lessee only in case of payment defaults)
19	Notice Period (Lessee)	6 months (Post lock in period)
20	Payment Terms	15 days (to be paid on 15th of every month)
21	Utility Charges (Electricity/Water/Power Back-up/Gas)	As per actuals

22	Tenant Improvement Charges (if any)	Shall be part of rentals (Sl no.7). Tenant improvement works include- 1. Considered canopy of 7 m 2. Additional Apron area considered as per the layout 3. Ramp - 1 Nos considered 4. Additional dock openings as per Nestle requirement considered 5. Porta cabin - 2 Nos considered 6. DRR & Canteen considered 7. Boom barrier - 2 Nos considered 8. Additional Parking area considered 9. Pedestrian Pathway considered 10. Structural support from the warehouse ceiling to fix the false ceiling for the cold storage room for below mentioned load: Weight of Panels Including People : 150 Kg/Sq. Mtrs Weight of Panel without Person : 50 Kg/Sq. Mtr can be 11. Purlin Support for Wall Fixing preferably 50x50 every 4 mtrs from the ground level on both side of the bay or alternatively Z perlins can be used as well 12. Support for Condensing Unit Stand
23	SD Payable Date	50% payable on signing of the Lease Agreement Balance 50% payable on possession/ handover
24	Lease Commencement Date	On or before 5 months from signing of Lease agreement, receipt of 1st tranche of SD & finalisation of master layout by Nestle or handover of the facility (as per the mutually agreed specification sheet) whichever is earlier. Developer must give prior intimation of 3 months before handover.
25	Office Area	Not applicable
26	Penalty Clause in case of delay in handover	30 days grace period from lease commencement date. From 31st to 60th day, 1 day rent free period for 2 days delay. After 61st day, 1 day rent free period for 1 day delay.

25.2. Valuation by DCF Method (in the hands of lessor)		
1	Name of the **Lessor**	M/s. ----------Parks Pvt. Ltd.
2	Name of the **Lessee**	M/s. ----------Limited., Mumbai
3	Property Address	Ware House - II (Block - B), Coimbatore
4	**Plinth Area as per Lease Deed**	
a	Ware House - II	1,21,350.00 Sq.ft
b	Driver's Rest Room and Canteen	1730.00 Sq.ft
c	Security Room	187.00 Sq.ft
d	**Total (Plinth Area)**	**1,23,267.00 Sq.ft**
c	Open Parking Area	17,577.00 Sq.ft
f	Open Space	47,503.00 Sq.ft
g	Total Leased Area	1,88,347.00 Sq.ft
h	**Chargeable area in sqft**	**1,31,896**
5	Term (Lease)	6 Years Period
a	Lease Commencement Date / Possession Date	08.05.2023
b	Final Handover Date	21.06.2023
c	Rent Commencement Date Valid	06.08.2023
6	Year of Year escalation	4%
7	Security Deposit	1,57,48,382

8	Operating Cost (Assumed) - Property tax, Repairs & maintenances, Property & service management	10%

Annual Rental Calculation

Period		Chargeable area	Rent / Sq.ft/Month (Rs.)	Rental / Month (Rs.)	Annual rental value (Rs)
1	6th August 2023 to 5th August 2024	1,31,896	19.90	2624730	31496760
2	6th August 2024 to 5th August 2025	1,31,896	20.70	2730247	32762964
3	6th August 2025 to 5th August 2026	1,31,896	21.52	2838402	34060824
4	6th August 2026 to 5th August 2027	1,31,896	22.38	2951832	35421984
5	6th August 2027 to 5th August 2028	1,31,896	23.28	3070539	36846468
6	6th August 2028 to 5th August 2029	1,31,896	24.21	3193202	38318424

Period	Rental / Annual (in Rs.)	Interest @ 6% for security deposit (in Rs.)	Gross annual income	Deduction for Operating cost @ 10%	Net income year wise

1	Lease year 1	3,14,96,760	9,44,903	3,24,41,663	32,44,166	2,91,97,497
2	Lease year 2	3,27,62,964	9,44,903	3,37,07,867	33,70,787	3,03,37,080
3	Lease year 3	3,40,60,824	9,44,903	3,50,05,727	35,00,573	3,15,05,154
4	Lease year 4	3,54,21,984	9,44,903	3,63,66,887	36,36,689	3,27,30,198
5	Lease year 5	3,68,46,468	9,44,903	3,77,91,371	37,79,137	3,40,12,234
6	Lease year 6	3,83,18,424	9,44,903	3,92,63,327	39,26,333	3,53,36,994
Total		**20,89,07,424**	**56,69,418**	**21,45,76,842**	**2,14,57,685**	**19,31,19,157**

Discount Rate -WACC calculation	
Estimation of Kd by build-up method (Debt)	
Prevailing bank minimum interest rate for SME loan	9.50%
Debt risk premium for this account	0.40%
Documentation & other charges (Insurance)	2.10%
Total	**12.00%**
Estimation of Ke by build-up method	
Risk free rate for 7 to 10 year Govt Bonds – 5.5%	5.50%
Macro / Meso market risk	1.00%
Property sector risk	1.00%
Location risk - 1.5%	1.50%
Risk associated with office space	1.00%
Market Risk associated with physical and technological obsolescence	1.00%

Rental / contractual risk - 1.0%	1.00%
Total	12.00%

Discount Rate -WACC	Kd * D% + Ke * E%
Equity	**₹ 40,00,00,000**
Debt	**₹ 30,00,00,000**
Discount Rate -WACC	**12.00%**

Valuation by DCF

Formula: Value = $CF_1/(1+r)^1 + CF_2/(1+r)^2 + ... + CF\ n/(1+r)^n + TV/(1+r)^n$

year	**Discount factor**	**NOI**	**PV**	**PV on NOI**
1	12%	2,91,97,497	100% Free Cash Flow for the First Year	₹ 2,91,97,497
2	12%	3,03,37,080	0.7972	₹ 2,41,84,534
3	12%	3,15,05,154	0.7118	₹ 2,24,24,746
4	12%	3,27,30,198	0.6355	₹ 2,08,00,633
5	12%	3,40,12,234	0.5674	₹ 1,92,99,455
6	12%	3,53,36,994	0.5066	₹ 1,79,02,821
Terminal value- Perpetuity on 12% yield on end year income				₹ 3,15,50,888
Capitalized value				**₹ 16,53,60,574**

26.0. Case Study 2

M/S ---------- resorts Pvt Ltd, Kodai submitted the IT Return as per the Balance Sheet for the present 5 years for availing a loan from the financial institution.

The Capitalised value is to be worked out with the prevailing bank minimum interest rate for these types of loan.

IT Return as per the Balance Sheet of ----- Resorts				
Financial Year				Net profit
2019-2020				₹ 29,94,848
2020-2021				₹ 4,21,17,378
2021-2022				₹ 7,18,27,598
2022-2023				₹ 8,77,66,471
2023-2024				₹ 14,39,62,028
Average for 5 years				₹ 6,97,33,665
Valuation by DCF				
Period (Financial Years)	Discount Rate assumed (50%*18% & 50%*12%)	Assumed average NOI	PV	PV on NOI
2024-2025	15%	₹ 6,97,33,665	0.870	₹ 6,06,68,289
2025-2026	15%	₹ 6,97,33,665	0.756	₹ 5,27,18,651
2026-2027	15%	₹ 6,97,33,665	0.658	₹ 4,58,84,752
2027-2028	15%	₹ 6,97,33,665	0.572	₹ 3,98,87,656
2028-2029	15%	₹ 6,97,33,665	0.497	₹ 3,46,57,632

Terminal value	₹ 6,06,37,970
Capitalised value	**₹ 29,44,54,950**

27.0. Case Study 3

M/S ---------- resorts Pvt Ltd, Kodai submitted the IT Return as per the Balance Sheet for the present 5 years along with projections for further 5 years for availing a loan from the financial institution. The projected Capitalized value is to be worked out with the prevailing bank minimum interest rate for these types of loan.

IT Return as per the Balance Sheet of M/S ---------- resorts Pvt Ltd, Kodai				
Financial Year				Net profit
2019-2020				₹ 29,94,848
2020-2021				₹ 4,21,17,378
2021-2022				₹ 7,18,27,598
2022-2023				₹ 8,77,66,471
2023-2024				₹ 14,39,62,028
Proposed increase every year (Assumed) as per CA statements				15%
2024-2025				₹ 16,55,56,332
2025-2026				₹ 19,03,89,782
2026-2027				₹ 21,89,48,249
2027-2028				₹ 25,17,90,486
2028-2029				₹ 28,95,59,059
Valuation by DCF				
Period (Financial Years)	Discount Rate assumed (60%*20% & 40%*12%)	Assumed average NOI	PV -16.80%	PV on NOI
2024-2025	16.80%	₹ 16,55,56,332	0.856	₹ 14,17,16,220
2025-2026	16.80%	₹ 19,03,89,782	0.733	₹ 13,95,55,710

2026-2027	16.80%	₹ 21,89,48,249	0.627	₹ 13,72,80,552
2027-2028	16.80%	₹ 25,17,90,486	0.537	₹ 13,52,11,491
2028-2029	16.80%	₹ 28,95,59,059	0.46	₹ 13,31,97,167
Terminal value				**₹ 24,79,10,153**
Capitalized value				**₹ 93,48,71,293**

28.0. Case study 4

A Charitable Trust running a group of schools and hospitals in various locations in South India plans to purchase school vans & hospital emergency vans and approached a financial institution for a financial assistance as well as construction of buildings to a tune of Rupees 30 Crores. The financial institution wants the capitalized value. The fair market value of the above mentioned trust properties of schools and hospitals are arrived at Rupees 37,73,66,600.

FY	Surplus income	Depreciation & other non-cash items	Total
FY 2021-22	₹ 91,67,237	₹ 55,97,380	₹ 1,47,64,617
FY 2022-23	₹ 7,22,27,832	₹ 49,88,205	₹ 7,72,16,037
FY 2023-24	₹ 3,02,00,062	₹ 67,32,625	₹ 3,69,32,687
Total	₹ 11,15,95,131	₹ 1,73,18,210	₹ 12,89,13,341
Average			₹ 4,29,71,114
kd = cost of debt			**₹ 30,00,00,000**
ke = cost of equity			**₹ 45,00,00,000**
Total			₹ 75,00,00,000
D% = % of debt			40%
E% = % of equity			60%
Discount Rate -WACC (Kd * D% + Ke * E%)			

Mortgage rate (D%)	12%
Expected return on equity (E%)	10%
Discount Rate	10.80%
Average net income for 3 years	₹ 4,29,71,114
YP	9.26
Capitalized value	**₹ 39,79,12,516**