Projection bias: We project recent past to the distance future completely ignoring the distant past.

Winner's curse: Tendency to make sure that a competitive bid is won even after overpaying for the asset. While behaviourally it is a win, financially, it may be a loss.

The Gambler's Fallacy (also known as the Monte Carlo Fallacy) is a cognitive bias where people mistakenly believe that if a random event has occurred more (or less) frequently than expected in the past, it will "balance out" by occurring less (or more) frequently in the future. This assumes a sense of "due" or "correction" in independent events, ignoring that each outcome is statistically independent and unaffected by prior results.

Benjamin Graham: "*The Intelligent Investor*"

Treynor Ratio: return-risk/beta

Sharpe Ratio: return-risk/SD (Sharpe=Standard Deviation)

Generally, at the time of distress in economies, interest rates go significantly down to give push to the economies and at that time equities may be available at dirt cheap valuations even on the basis of dividend yield.

BETA: measure of the systematic risk of a security or a by comparing the volatility in the investment relative to the market. *It measures the risk of an investment that cannot be diversified away.* Beta is used in the capital asset pricing model (CAPM-BETA_CAP_Mein), a model that calculates the expected return of an asset based on its beta and expected market returns. Model assumes that the beta is the only reason why an investor should expect a return higher than market/index return.
However VALUE INVESTORS don't give much weightage to Beta.

Short Examples of Sensitivity Analysis

1. **DCF Valuation**: Vary growth rate from 4% to 6% in a stock's cash flow model—value drops 20% at lower rate, highlighting revenue risk.
2. **Break-Even Point**: In project finance, adjust fixed costs by ±10%—break-even sales rise 15%, showing cost sensitivity.
3. **Option Pricing (Black-Scholes)**: Change volatility from 20% to 30%—call option price jumps 25%, revealing market risk exposure.

A commonly used probability based risk metric is VaR

CV = (Standard Deviation / Mean) × 100%

Inflation risk is highest in fixed return instruments, such as bonds, fixed deposits and debentures. Inflation risk is fairly less for equity shares as business also increases a bit.
In Venezuela's hyperinflation case, rates soared from 2016, peaking at 65,370% (prices up 654x) in 2018. Bonds cratered to near-worthless, but Caracas Stock Index surged over 1,000x.

Business Risk is also known as operating risk

Debt instruments(bonds) are subject to default risk as they have pre-committed pay outs.

Holding a diversified portfolio of bonds reduces the default risk

Call risk is specific to bond issues and refers to the possibility that a debt security will be called prior to its maturity.

- If Interest rate rises, reinvestment risk reduces or is eliminated
- If Interest rate falls, reinvestment risk increases

Risk Type	Explanation	Examples
Systematic Risk	Market-wide risks affecting the entire economy or financial system; cannot be diversified away through portfolio construction. Measured by beta in CAPM. Inflation risk, exchange rate risk, interest rate risk and reinvestment risk are systematic risks.	Interest rate changes, recessions, inflation, geopolitical events (e.g., wars).
Unsystematic Risk	Company- or industry-specific risks that can be reduced or eliminated via diversification (e.g., holding multiple stocks). Also called specific or idiosyncratic risk. Credit risk, business risk, and liquidity risks.	Management scandals, product recalls, labor strikes, regulatory changes for a single firm (e.g., Boeing's 737 MAX issues).

CAPM: Capital Asset Pricing Model, a foundational financial theory used to determine the expected return on an investment (like a stock) based on its risk relative to the overall market. Developed in the 1960s by William Sharpe, John Lintner, and Jan Mossin, it helps investors price assets and build diversified portfolios by linking risk (measured as beta) to required returns.

- **Investors**: Guides whether a stock is undervalued/overvalued (compare expected vs. actual return).
- **Limitations**: Assumes efficient markets and rational investors; ignores unsystematic risks (diversifiable via portfolios).

Gold and other commodities, there is no periodic return at all.

ROI = [(Total Returns - Total Cost) / Total Cost] × 100%.
The absolute return is converted into annualized return by dividing it by the number of months/days that the investment was held and multiplying it by 12 months/365 days. Eg. 23% for 15 months: (23%/15) x 12 = 18.4%

10.1 Some Important Considerations in the Context of Business Valuation

- If earning power of a business is high, book value (BV) of shares could be less important. But, if earning power of business is low, BV becomes very important.
- As equity/share reflects part ownership in a business, to value share, we need to value entire business.
- EV and not the market capitalization is the true value of the firm for private owner.
- PE for a leveraged firm may be deceptive – look at debt levels in the business.
- Look at the consolidate numbers and not just the standalone numbers.
- Focus on ROE and not EPS – EPS does not account for retained earnings.
- Leverage improves ROE but excessive leverage is risky.
- Differentiate between ROCE and ROE – ROCE reflects the true return on capital. ROE could be manipulated by high leverage.
- ROCE and ROE should be closely knit. Any wide variation should trigger investigations.
- Growth rates in projections should align with industry benchmarks; overly optimistic assumptions inflate DCF values.
- Intangible assets like patents or goodwill often require separate appraisal beyond book value.

- Normalized earnings exclude one-off gains/losses to reflect sustainable performance.
- Comparable company multiples must adjust for size differences; smaller firms often trade at discounts.
- Control premiums apply to majority stakes but not minority shares in valuations.
- Economic Value Added (EVA) highlights true economic profit after cost of capital.
- Inflation-adjusted replacement cost is crucial for asset-heavy industries in book value methods.
- Cyclical firms need average earnings over 5-7 years for accurate multiples.
- Synergies in acquisition valuations should be conservatively estimated and buyer-specific.
- Beta in CAPM should be unlevered for pure operational risk assessment.
- Free cash flow to equity (FCFE) is preferable over dividends for growth-oriented firms.
- Dividend Discount Model (DDM) works best for mature, high-payout companies.
- Sum-of-the-parts valuation breaks down conglomerates into segment-specific multiples.
- Foreign exchange volatility requires hedging adjustments in cross-border enterprise values.
- ESG risks can warrant a 10-20% discount in modern valuations.
- Qualitative factors like management track record overlay quantitative metrics.
- Working capital fluctuations signal cash conversion efficiency; normalize for trends.
- Tax shields from interest deductibility boost APV in leveraged buyouts.
- Market multiples reflect sentiment; intrinsic value prevails long-term.
- Precedent transactions include synergies, unlike pure comps.
- Terminal growth rate in DCF should not exceed GDP; sensitivity test extremes.
- Illiquidity discounts (20-30%) apply to private vs. public firm valuations.
- Off-balance-sheet liabilities (e.g., leases) must be capitalized for true EV.
- Peer selection for multiples should match geography and growth stage.
- Scenario analysis (base/best/worst) brackets valuation ranges for uncertainty.
Discounted Cash Flow (DCF) valuations are sensitive to terminal value assumptions; use Gordon Growth Model cautiously with conservative rates.
- Enterprise Value (EV) multiples like EV/EBITDA are preferred over P/E for cross-border comparisons due to tax and leverage neutrality.
- Book value adjustments for fair value accounting reveal hidden assets/liabilities in asset-intensive sectors.
- Relative valuation requires a peer universe of at least 5-10 comparable firms for robust median multiples.
- Free Cash Flow (FCF) to Firm (FCFF) is ideal for EV; adjust for capex and working capital changes accurately.
- High-growth firms may justify negative earnings with positive FCF; focus on cash generation over accounting profits.
- Weighted Average Cost of Capital (WACC) in DCF must incorporate optimal capital structure, not current debt levels.
- Sensitivity analysis on WACC (±1-2%) and growth rates (±0.5-1%) tests DCF robustness for exam scenarios.
- Minority interest discounts (10-30%) apply to non-controlling stakes in subsidiary

valuations.

- Contingent liabilities like lawsuits should be probabilistically valued and deducted from equity value.
- Revenue multiples suit early-stage tech firms where profits are absent; compare to industry peers.
- Asset-based valuation (NAV) is reliable for holding companies or real estate; appraise underlying assets separately.
- EBITDA add-backs for non-recurring items must be justified with historical evidence.
- Market approach assumes efficient markets; in illiquid markets, apply liquidity discounts.
- Income approach (DCF) excels for going concerns; avoid for distressed firms where liquidation value dominates.
- Hybrid valuations blend DCF with multiples for triangulation, reducing method-specific biases.
- Change in control can unlock value; add 20-40% premium for strategic acquisitions.
- Industry-specific multiples (e.g., P/S for retail, EV/Sales for cyclicals) outperform generic ones.
- Retained earnings' opportunity cost is embedded in ROE; high retention should drive growth, not just accumulation.
- DuPont analysis decomposes ROE into margins, turnover, and leverage for deeper insights.
- Valuation date matters; use trailing twelve months (TTM) data for timeliness over fiscal year-ends.
- Cross-holding adjustments prevent double-counting in consolidated valuations.
- Option pricing models (Black-Scholes) value employee stock options, diluting true EPS.
- Regulatory capital requirements impact bank valuations; use Tier 1 ratios in multiples.
- Post-valuation, sanity-check against historical trading ranges and analyst consensus targets.

- Residual income models value equity as book value plus present value of future excess earnings over required return.
- Adjusted Present Value (APV) separates base-case DCF from financing effects like tax shields in complex capital structures.
- Industry life cycle stage influences multiples; growth firms command higher EV/Sales than mature ones.
- Goodwill impairment testing under Ind AS 36 requires annual reviews, impacting post-acquisition valuations.
- Monte Carlo simulations in DCF account for probabilistic inputs like volatile commodity prices.
- Trading multiples should exclude outliers; use median over mean for skewed peer data.
- Capitalized earnings method suits stable firms; apply to normalized EBIT with industry cap rates.
- Cross-border valuations need PPP adjustments for currency distortions in emerging markets.
- Employee stock option expense dilutes EPS; use treasury stock method for accurate

per-share value.

- Regulatory approvals delay synergies; discount acquisition premiums by time-value of approvals.
- Core vs. non-core assets require separate multiples; divestitures unlock hidden value.
- WACC beta should be forward-looking; historical betas may understate cyclical risks.
- Real options analysis values flexibility in R&D or expansion projects beyond static DCF.
- Market sentiment proxies like VIX can adjust multiples during volatile periods.
- Consolidated EV deducts non-operating cash; standalone may overstate for holding companies.
- DuPont ROE breakdown reveals if high returns stem from margins, efficiency, or leverage.
- Valuation waterfalls allocate EV to debt, prefs, and equity in capital structure analysis.
- Inflation impacts capex projections; use real vs. nominal rates consistently in DCF.
- Peer comps should normalize for accounting differences (e.g., LIFO vs. FIFO inventory).
- Exit multiples in DCF terminal value assume steady-state; mismatch growth leads to errors.
- Contingent claims like warranties reduce seller value; model as put options.
- Geographic segment reporting aids sum-of-parts; allocate shared costs proportionally.
- Cost of equity via Build-Up Method adds premiums for size, illiquidity in private valuations.
- Post-merger integration costs haircut synergies; cap at 20-30% of gross benefits.
- Valuation disclaimers note assumptions; sensitivity tables mandatory for report credibility.

Book value focuses on assets minus liabilities; ignore it for service firms where intangibles dominate.

- Always subtract net debt from EV to get equity value; cash adds back.
- P/E ratio ignores capital structure; use EV/EBITDA for debt-heavy firms.
- High ROE from leverage can mislead; check interest coverage ratio too.
- Standalone financials hide group risks; always review consolidated statements.
- Normalized EPS smooths out exceptional items for fair comparison.
- Industry averages guide multiples; a low multiple may signal distress.
- Discount rate in DCF should match risk; too low overvalues the firm.
- Terminal value often makes up 60-80% of DCF; keep growth realistic.
- Asset valuation suits liquidation; use income methods for ongoing businesses.
- Control value includes premiums for decision power; minority lacks it.
- Free cash flow beats net income; it shows cash after reinvestments.
- Beta measures market risk; adjust for private firms with higher betas.
- Synergies in M&A add value but are hard to prove; cap at 10-15%.
- Working capital trends affect cash flow; rising needs signal issues.
- Inflation erodes real returns; use real rates in projections.
- Peer selection: Match on size, growth, and margins for valid comps.
- Goodwill arises in acquisitions; test for impairment yearly.

- Option value in projects adds upside; use for R&D investments.
- Market volatility affects multiples; use averages over 3-5 years.
- Retained profits should fund growth; low payout means high reinvestment.
- DuPont formula breaks ROE: Profit margin × asset turnover × equity multiplier.
- Scenario testing: Base case 60% weight, optimistic/pessimistic 20% each.
- Illiquid assets get discounts; private firms trade 20-40% below public.
- Final valuation: Triangulate DCF, multiples, and assets for reliability.

- Understand price as market quote versus value as intrinsic worth; valuations bridge the gap for informed decisions.
- Valuations are essential for investment decisions, M&A, and regulatory compliance in research reports.
- Sources of business value stem from earnings potential and underlying assets; balance both in analysis.
- Income approach (DCF) suits going concerns; focus on future cash flows over historical earnings.
- Market approach uses peer multiples; select comparables by industry, size, and growth stage.
- Asset-based valuation (NAV) is key for holding companies; appraise assets at fair market value.
- Discounted Cash Flow model discounts projected FCF at WACC; sensitivity to growth rates is high.
- Relative valuation via multiples like P/E or EV/EBITDA assumes market efficiency; adjust for anomalies.
- Earnings-based matrices include dividend yield and PEG ratio; PEG normalizes P/E for growth.
- Asset-based matrices like P/BV ratio suit banks; compare to ROE for value creation.
- Sum-of-the-parts valuation breaks conglomerates into segments; apply unique multiples per unit.
- For new-age businesses, use EV/Capacity or user-based multiples like EV/ARPU in telecom.
- Important: Align projections with economic cycles; use normalized earnings for cyclicals.
- Consider regulatory changes; they alter industry KPIs like market share or churn rates.
- Quality of management impacts valuation; assess governance via independent directors.
- Pricing power sustains moats; value firms with durable competitive advantages higher.
- Track industry drivers like ARPU and acquisition costs; they influence revenue multiples.
- Corporate actions like dividends affect valuations; adjust for payout ratios in DDM.
- Risk-adjusted returns: Higher beta demands premium; use CAPM for cost of equity.
- Qualitative factors like business model sustainability overlay quantitative metrics.
- Financial analysis: ROCE better than ROE for capital efficiency in leveraged firms.
- Valuation triangulation: Cross-check DCF with multiples and assets for accuracy.
- Inflation risk in projections: Use real cash flows and nominal discount rates consistently.

- ESG integration: Deduct for poor governance in modern valuation frameworks.
- Exam tip: Focus on Ind AS impacts on valuations, like fair value for intangible