0 · How to Use This

READ FIRST

★ FNCE20005 is graded 25% mid-sem test (1 hr, Wk 6) + 60% final exam + 5% homework quiz + 10% tutorials. A **formula sheet is provided** in the MST — so marks come from *setting up & interpreting*, not memorising. This sheet groups every formula with its decision rule + a worked number.

It is the **second** finance subject: TVM, bonds & CAPM are assumed background (Side 1); the taught, examinable core is the Australian-flavoured toolkit — imputation, payout, leases, capital structure, real options, M&A (Side 2).

SIA → *Every question is 'match the discount rate to the cash flow's risk & timing.' The wrong rate, the wrong tax rate, or a wrong cash-flow sign sinks more marks than arithmetic ever does.*

0b · Exam Blueprint

WHERE MARKS LIVE

MST (Wk 6, ~Lec 1–5): equity raising & rights, payout & imputation, leases, WACC & capital structure, advanced budgeting. Multi-part numerical with a formula sheet.

Final (60%, cumulative): adds real options, M&A valuation & economics, restructuring, distress, risk management. Expect one big DCF/valuation, one capital-structure/WACC, one payout/imputation, plus short theory.

- Show the **formula → substitution → answer** chain — method earns marks even if the number slips
- **State your decision** (accept/reject, lease/buy) explicitly
- Carry **units & signs**; label $ vs %
- Quote the **decision rule** threshold (NPV>0, IRR>k, PI>1) before you compute

The MST is short — practise the rights, imputation & WACC numericals to near-automatic; the final rewards clean valuation set-ups and tight theory.

0c · Master Toolkit Map

THE SPINE

Every valuation is one engine — discounted cash flow — pointed at a different object:

1. **A bond** → PV of coupons + face
2. **A share** → PV of dividends (Gordon)
3. **A project** → NPV of free cash flows
4. **A firm** → FCF ÷ WACC + terminal value
5. **A target** → firm value + synergies

Master the discount rate (CAPM for k_e, WACC for the firm) and the rest is bookkeeping.

Three recurring questions: what is it worth (valuation), should we invest (capital budgeting), how do we finance & pay out (structure, payout, imputation). The course is the bridge from "Principles" mechanics to *real-firm* decisions.

1 · Time Value of Money

BACKGROUND · ON SHEET

SINGLE SUM

$FV = PV(1+r)^t$ $PV = FV/(1+r)^t$

ORDINARY ANNUITY (C FOR T YRS)

$PV = (C/r)\cdot[1 - 1/(1+r)^t]$

$FV = (C/r)\cdot[(1+r)^t - 1]$

Annuity due (cash in advance, e.g. lease rentals): multiply the ordinary-annuity PV by $(1+r)$, or place the first cash flow at t=0.

PERPETUITY / GROWING PERP.

$PV = C/r$ $PV = C_1/(r-g)$

GROWING ANNUITY

$PV = (C_1/(r-g))\cdot[1 - ((1+g)/(1+r))^t]$

Rates: effective = $(1 + i/m)^m - 1$; after-tax = $r(1-t_c)$.

Compound more often ⇒ higher effective rate.

SIA → *A terminal value is a value AT year T – it must itself be discounted back. Match real CF to real rates, nominal to nominal.*

2 · Bond Pricing & YTM

BACKGROUND

BOND PRICE

$P = C\cdot[1-(1+y)^{-n}]/y + F/(1+y)^n$

YTM = the y that solves the price equation (iterate). Price moves inversely with yield.

Cost of debt k_d = today's *market* rate for that credit rating — not the coupon. For valuation, k_d is an expected return, not simply the promised YTM (which embeds default).

Trap: don't confuse coupon rate, current yield (C/P) and YTM; and don't plug YTM in as the cost-of-debt input in WACC when the question wants an expected return.

A bond trades at *par* when coupon = YTM, at a *premium* when coupon > YTM, at a *discount* when coupon < YTM. Longer maturity ⇒ more price sensitivity to yield.

3 · Share Valuation

GORDON · ON SHEET

GENERAL DDM

$P_0 = \Sigma\ E[D_t]/(1+k_e)^t$

CONSTANT-GROWTH (GORDON)

$P_0 = D_1/(k_e-g) = D_0(1+g)/(k_e-g)$

$\Rightarrow k_e = D_1/P_0 + g$

Ex: D_0=$2, g=4%, k_e=12% → $P_0 = 2(1.04)/(0.12-0.04) =$ $26.00.

Traps: use D_1 not D_0; need $k_e > g$ or the formula breaks; constant g is wrong for a high-growth firm — use a two-stage DDM (forecast then terminal Gordon) instead.

4 · Capital Budgeting Rules

LEC 5 · CORE

NPV — THE DOMINANT RULE

$NPV = \Sigma\ E[CF_t]/(1+k)^t - CF_0$

accept if NPV > 0

IRR = the rate where NPV = 0; accept if IRR > k. *Pitfalls:* multiple/no IRR with sign changes, scale & timing, reinvestment assumption.

PROFITABILITY INDEX

PI = PV(inflows)/initial outlay → accept if > 1

Payback = years to recoup the outlay; **discounted payback** uses PV. Both ignore cash flows beyond the cutoff.

RULE	ACCEPT IF	WEAKNESS
NPV	> 0	needs k
IRR	> k	scale/sign
PI	> 1	scale
Payback	< cutoff	ignores TVM/tail

4b · NPV vs IRR Conflict

EXAM FAVOURITE

For **mutually exclusive** projects, scale & timing differences can rank them oppositely. When they conflict, trust NPV (it measures $ value added; IRR is only a rate). Survey lore: US firms lean IRR, AU firms lean NPV.

The **crossover rate** = the IRR of the *incremental* cash-flow stream; below it, the bigger-NPV project wins. PI also helps rank under capital rationing when you can't take every +NPV project.

For a *non-conventional* stream (sign flips more than once) IRR can give multiple roots — fall back to NPV, or use the modified IRR (MIRR) which assumes reinvestment at k.

4c · Free Cash Flow

LEC 7 · ON SHEET

FCF TO THE FIRM

FCF = EBIT(1-t_c) + Dep - ΔNWC - CapEx (+ after-tax asset sales)

Rules: use *incremental* after-tax CF; ignore sunk costs; include opportunity costs & ΔNWC.

DEPRECIATION TAX SHIELD

$= t_c \times$ depreciation

Depreciation isn't a cash flow — only its tax shield is. ΔNWC reverses at project end (recover working capital).

TERMINAL VALUE (YEAR T)

$TV_T = FCF_T(1+g)/(WACC-g)$

TV is a growing perpetuity valued *at* year T — then discount it back T periods. It often dominates a DCF, so the long-run g assumption is where valuations are won or lost (keep g < WACC and below long-run GDP growth).

5 · Project-Risk Tools

LEC 5

Sensitivity analysis · change *one* input (best/base/worst), hold the rest, read the NPV range. The widest range = the most sensitive variable (often selling price).

Scenario analysis · move several linked inputs together (e.g. a recession case) — captures interrelations sensitivity misses.

Break-even · solve the input value that sets NPV = 0 (e.g. price can fall 2.8%, volume 19.9%).

Monte Carlo · assign distributions to inputs, draw thousands of NPVs → P(NPV<0) & a 95% band. *(Excel demo: optional, not examinable.)*

Decision trees · sequential choices under probability; solve by roll-back (solve the most distant decision first, work back to today). The branch values capture the option to abandon, expand or continue.

Each tool answers a different question: sensitivity → *which* input matters; break-even → *how far* it can move; scenario → *combined* downside; simulation → the *whole* NPV distribution.

SIA → *Sensitivity gives a range; break-even gives a threshold. Roll a tree backward, never forward – and remember depreciation's tax shield is the only cash effect.*

6 · Risk & Return

BACKGROUND

EXPECTED RETURN / VARIANCE

$E[R] = \Sigma\ p_i R_i$

$\sigma^2 = \Sigma\ p_i(R_i - E[R])^2$

Portfolio return = weighted average of asset returns. For two assets:

2-ASSET VARIANCE

$\sigma^2_p = w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + 2w_Aw_B\rho\sigma_A\sigma_B$

Diversification cuts only unsystematic (firm-specific) risk; systematic (market) risk remains.

6b · Two Kinds of Risk

KNOW THE SPLIT

SYSTEMATIC	UNSYSTEMATIC
market-wide	firm/industry-specific
NOT diversifiable	diversifiable away
priced (β)	not rewarded

This is why "diversification" is a dubious takeover motive — shareholders can diversify themselves cheaply, so a firm merging to diversify creates no value for them.

Correlation ρ drives the gain: the lower ρ, the more variance falls for a given expected return. Adding assets removes idiosyncratic risk until only market risk (the systematic floor) remains — about 20–30 stocks captures most of it.

7 · CAPM & the SML

ON SHEET · CORE

Beta β = sensitivity of a stock to the market (a covariance measure) — the slope of stock returns regressed on market returns. β=1 moves with the market; β>1 amplifies it.

CAPM — COST OF EQUITY

$k_e = R_f + \beta_e\cdot[E(R_M) - R_f]$

Ex: R_f=2.75%, β=1.25, MRP=5.76% → k_e = 2.75 + 1.25×5.76 = 9.95%.

The ***security market line (SML)*** plots E[R] against β; its slope = the market risk premium $[E(R_M)-R_f]$. Assets *above* the SML are underpriced (buy); below = overpriced.

Traps: use β (systematic risk), not total σ; never use a stale/levered β for a project of different risk (see Side 2 §13).

Reading the SML is a classic exam move: a stock plotting above the line offers more return than its β warrants (buy); below the line it's overpriced (sell). In equilibrium all assets sit on the SML. Don't confuse the SML (return vs β) with the CML (return vs total σ).

7b · Estimating the Inputs

CAPM IN PRACTICE

- **R_f** — government bond yield (match the horizon)
- **MRP** — long-run historical equity premium (~6%)
- **β** — regression slope; lever/unlever for gearing changes
- **k_e** always > k_d — equity is the riskier, residual claim

Two routes to k_e: CAPM or the Gordon-growth DCF ($k_e = D_1/P_0 + g$) — quote both if a question gives the data. The CAPM rewards only β; total risk σ is irrelevant to a diversified investor.

8 · Raising Equity

LEC 1

Equity = permanent capital, full voting rights, residual + subordinated claim, the riskiest claim. Ladder: private equity (angel, VC) → IPO → SEOs (placement, rights, DRP). The primary market (firm ↔ investor) funds the firm; the secondary (investor ↔ investor) does not.

IPO pricing: fixed price (AU traditional), book-building (US), Dutch auction (Google 2004).

IPO UNDERPRICING

$=$ (1st-day close - offer)/offer

Ex: Alibaba ($93.89–$68)/$68 = 38.1% — "money left on the table." **Why:** winner's curse (info asymmetry), market-feedback, IB conflicts, litigation insurance, signalling. Long-run IPOs tend to *underperform* (clientele, impresario, window-of-opportunity hypotheses).

8b · Rights Issues

ON SHEET · MST

A 1-for-N issue at subscription price S, cum-rights price M:

THEORETICAL EX-RIGHTS PRICE

$X = (N\cdot M + S)/(N + 1)$

VALUE OF A RIGHT

$R = X - S = N(M - S)/(N + 1)$

Ex (1-for-5, M=$3.50, S=$2.50):
X = (5×3.50 + 2.50)/6 = $3.33;
R = 3.33 – 2.50 = $0.83.

Renounceable rights: exercise OR sell the right leaves wealth unchanged; *doing nothing dilutes you & loses wealth*. Non-renounceable rights can't be sold.

Placement ≤15% of capital / 12 mo without approval (ASX LR 7.1; temporarily 25% in COVID); at a discount ⇒ wealth transfer to new holders & voting dilution. **DRP** = "a very small rights issue."

SIA → *Compute R via X – never directly from S. And only a 'primary'-market issue puts cash into the firm.*

9 · Worked · Mini-NPV

THE FULL SHAPE

Project: outlay $100k; EBIT $40k/yr for 3 yrs; dep $20k/yr (3 yrs); t_c=30%; k=10%; no ΔNWC.

ANNUAL FCF

$= 40(1-.3) + 20 = 28 + 20 = \$48k$

NPV

$= 48\cdot[1-1.10^{-3}]/0.10 - 100$
$= 48\times2.4869 - 100 =$ +$19.4k

NPV > 0 ⇒ **accept**. Depreciation enters only via the +$6k/yr tax shield, already inside the EBIT(1−t)+Dep line.

IRR check: the rate that sets this NPV to 0 is ≈24%; since 24% > k=10%, IRR agrees — accept. If a question added ΔNWC of $5k at t=0, you'd subtract it now and recover it at t=3. PI here = 119.4/100 = 1.19 (>1) — all three rules agree.

Side-1 Formula Belt

MEMORY HOOKS

$PV_{ann} = (C/r)[1-(1+r)^{-t}]$

$Perp = C/r$ $GrowPerp = C_1/(r-g)$

$P_0 = D_1/(k_e-g)$

$NPV = \Sigma CF_t/(1+k)^t - CF_0$

$FCF = EBIT(1-t_c) + Dep - \Delta NWC - CapEx$

$TV = FCF_T(1+g)/(WACC-g)$

$k_e = R_f + \beta[E(R_M) - R_f]$

$X = (NM+S)/(N+1)$

$R = N(M-S)/(N+1)$

Discipline: rate ↔ risk; sign & timing of each CF; always discount the TV back; D_1 not D_0; effective vs nominal rates.

10 · WACC

LEC 4 · ON SHEET

WACC (MARKET-VALUE, TARGET WEIGHTS)

$$WACC = k_d(1-t_e)(D/V) + k_e(E/V)$$
$$V = D + E$$

Interpretation: the minimum return on existing-risk assets that preserves security value — the hurdle rate for **same-risk** projects.

k_d = risk-free + default spread (by credit rating, or a synthetic rating from interest coverage = EBIT/interest). k_e = CAPM or Gordon DCF.

Divisional pitfall: one firm-wide WACC over-funds high-risk divisions and starves low-risk ones — use a pure-play comparable's WACC matched to the project's risk.

SIA → ***Market weights, not book; t_e, not t_c. Never discount a different-risk project at the firm WACC.***

11 · Dividend Imputation

LEC 2/4 · SIGNATURE

The AU system since 1987 — franking credits pass corporate tax to resident holders, undoing double taxation.

GROSSED-UP DIVIDEND

$$Div_{gross} = Div_{cash}/(1 - t_c)$$

FRANKING CREDIT

$$= t_c \times Div_{gross}$$

Ex: $70 cash, t_c=30% → gross = 70/0.7 = $100; credit = 0.30×100 = $30. The holder is taxed on $100, then offsets the $30.

EFFECTIVE TAX RATE

$$t_e = t_c(1 - \lambda)$$

λ = fraction of corp tax reclaimed; λ=0 classical, λ=1 full imputation. **Ex:** 0.30(1−0.60) = 0.12.

11b · Payout Policy

LEC 2

Measures: yield = DPS/price; payout = DPS/EPS.

DROP-OFF RATIO (WITH TAXES)

$$(P_{cum}-P_{ex})/Div = (1-t_d)/(1-t_{cg})$$

Perfect market ⇒ drop = dividend (ratio 1). **MM irrelevance:** payout doesn't change value; investors make homemade dividends. It breaks via signalling (dividends are sticky), agency/free-cash discipline, taxes, issue costs.

If div & gains are taxed equally, drop = dividend; div taxed higher ⇒ drop < dividend; div taxed lower ⇒ drop > dividend.

Buybacks: lift EPS, signal undervaluation, add flexibility; no ex-div drop. Post-2023 AU: no tax edge to off-market. **Trap:** gross up by *dividing* by (1−t_c); don't apply franking to non-resident holders.

12 · WACC · Worked

TIE IT TOGETHER

Given: D/V=40%, E/V=60%, k_d=7%, k_e=18%, t_c=30%, λ=0.6 → t_e=0.12.

WACC

$$= 7\%(1-.12)(.40) + 18\%(.60)$$
$$= 7\times.88\times.40 + 10.8$$
$$= 2.46 + 10.8 = 13.3\%$$

Had you wrongly used t_c=30%: 7×.70×.40 = 1.96 ⇒ WACC 12.76% — so imputation raises the after-tax cost of debt, because less of the tax shield is "real."

13 · Capital Structure

LEC 4 · CORE

Cost-of-capital approach: firm value = Σ $CF_t/(1+WACC)^t$; value is maximised where WACC is minimised — a U-shape with an interior optimum.

LEVERED BETA · ON SHEET

$$\beta_L = \beta_U\cdot[1 + (1-t_e)\cdot D/E]$$

β_u (asset β) = business risk only; β_L adds financial risk. Unlever a comparable, re-lever to your gearing → k_e at each debt level.

THEORY	RESULT
MM no tax	$V_L = V_U$ (irrelevant)
MM + corp tax	$V_L = V_U + t_e\cdot D$
Trade-off	$+ t_eD - PV(\text{distress})$
Pecking order	internal → debt → equity

13b · The Theories in Words

EXAM THEORY

MM (no tax): perfect markets ⇒ structure irrelevant (pie theory — slicing the pie doesn't change its size).

MM (+ tax): perpetual debt ⇒ PV(tax shield) = t_e·D. Imputation neutralises this (λ=1 ⇒ t_eD=0), implying lower optimal AU leverage.

Trade-off: balance the tax shield against PV(expected distress) = P(distress)×cost — it has a *target*.

Pecking order (Myers–Majluf): asymmetric info ⇒ no target; finance from internal equity → debt → hybrids → external equity last; leverage = cumulative external need. Explains the negative price reaction to equity issues and why firms are reluctant to issue equity.

Distress costs: direct (legal — small) + indirect (lost customers/suppliers, reputation, management distraction — larger). Shareholders bear the *expected* cost via dearer debt.

Non-tax drivers: tangible/general-use assets → more debt capacity; debt disciplines empire-builders (Jensen's free-cash-flow problem); R&D-heavy/young firms carry less debt.

Trap: don't treat MM no-tax & with-tax interchangeably; trade-off has a target, pecking-order doesn't.

14 · Debt & Leases

LEC 3

Debt vs equity: temporary, prior + fixed claim, no votes, interest is tax-deductible, least risky to the investor; policed by *covenants* (negative/positive).

Operating lease = short, cancellable (lease-vs-buy). **Finance** lease = long, non-cancellable, effectively a loan (lease-vs-borrow-to-buy).

FINANCE LEASE NPV (LESSEE)

$$+ \text{asset cost} - PV(\text{rentals})$$
$$+ PV(t_c\cdot\text{rentals}) - PV(t_c\cdot\text{dep})$$
$$- PV(\text{residual \& tax on sale})$$

DISCOUNT RATE

$$\text{after-tax cost of borrowing} = k_d(1-t_c)$$

Ex: k_d=15%, t_c=34% → 15(1−.34)= 9.9%. NPV<0 ⇒ borrow-to-buy, reject the lease.

Frictionless: $NPV_{lessor} = -NPV_{lessee}$, so leases exist only via frictions — tax-rate differences, different costs of capital ($k_{lessor}<k_{lessee}$), transaction costs; off-balance-sheet is a *dubious* reason (IFRS 16 now capitalises). Operating-lease value = finance-lease NPV + PV(option to cancel).

Hybrids: convertible notes (debt + option to convert if the share price exceeds conversion value); preference shares (cumulative, non-voting; reset/step-up variants).

Trap: get the sign of each of the six cash flows right (you *avoid* the asset cost, so it's +); don't discount at the project's required return.

15 · Real Options

LEC 6

Real option = the right (not duty) to wait, expand, abandon or switch as news arrives. Static NPV is now-or-never, so it undervalues flexible projects.

OPTION VALUE

$$= NPV_{\text{with option}} - NPV_{\text{without option}}$$

TYPE	ANALOGUE	EXERCISE
Delay	call	invest if V>X
Expand	call	V>X
Abandon	**put**	quit if V<X
Switch	call	V>X

Equity = a call on firm value, strike = face of debt: Max(0, V−D).

Ex (option to delay): static NPV = $100−$95 = $5; waiting a year, [0.5×Max(150−100,0)+0.5×0]/1.15 = $21.74; option value = 21.74−5 = $16.74 = max fee worth paying to wait.

Black–Scholes is shown but *not examinable* — know the five inputs (V, X, σ, T, r) and that real options aren't exact-priced (long maturity, firm-specific, untraded).

SIA → ***Abandon is a PUT (X−V); the rest are calls. Most valuable when uncertainty is high & NPV-without-flex ≈ 0; don't double-count flexibility already in the discount rate.***

16 · M&A Valuation

LEC 7

Three approaches:

1 · INTRINSIC / DCF

$$Firm\ V = \Sigma\ E[FCF_t]/(1+WACC)^t + PV(TV)$$
$$Equity = Firm\ V - \text{net debt}$$

2 · RELATIVE / MULTIPLES

$$P_{target} = (P/E)_{industry} \times Earnings_{target}$$

3 · contingent claim (real-option) — for distressed, resource, biotech, high-growth firms.

APV

$$= V(\text{all-equity}) + PV(\text{interest tax shields})$$
$$\text{shield/yr} = D\cdot t_c\cdot k_d$$

Traps: discount FCF-to-firm at WACC, not k_e; subtract net debt for equity value; discount the TV back; don't use YTM as k_d.

16b · M&A Economics

LEC 8 · ON SHEET

SYNERGY GAIN

$$Gain = V_{AT} - (V_A + V_T)$$

CASH BID NPV

$$= Gain - (\text{cash paid} - V_T)$$

SCRIP BID NPV

$$= Gain - (b\cdot V_{AT} - V_T)$$

b = the fraction of the *combined* firm owned by the target's old holders. **Ex:** synergy $3m, $6 cash on a $5 share ⇒ NPV = 3 − 2 = $1m; max price (NPV=0) = $6.50. Cash vs scrip differs in who bears pre-close market risk (collars cap both sides).

Stylised facts: targets gain ~+16%, acquirers ~−0.7% (announcement CARs). Sensible motives: synergy, market power, replacing weak management, tax. Dubious: diversification, empire-building, hubris.

16c · EPS Bootstrapping

A TRAP

A high-P/E firm buying a low-P/E firm mechanically lifts EPS with no value created. The combined P/E must be re-estimated as the earnings-weighted average:

COMBINED P/E

$$= (P/E_A\cdot E_A + P/E_T\cdot E_T)/E_{A+T}$$

The "magic" earnings bump disappears once you re-price correctly.

16d · AU Thresholds

BRIGHT LINES

5% substantial-holder notice · 20% = must launch a bid · 50.1% control · 75% special resolutions · 90% compulsory acquisition. A creeping bid = +3%/6 mo past 20%.

17 · Restructuring

LEC 9

Diversification discount (Berger & Ofek): multi-segment firms trade ~12.7–15.2% **below** single-segment comparables ⇒ breaking up can unlock value.

MODE	CASH TO PARENT?	OWNER AFTER
Divestiture	Yes	third-party buyer
Spin-off	No	existing shareholders
Carve-out	Yes (partial IPO)	new public + parent

LBO/MBO: small equity + large outside debt buys (and takes private) a mature, low-risk, stable-cash-flow firm. Value via (1) financial engineering — debt discipline + interest tax shield + leverage amplifying equity returns; (2) governance — high management equity + active PE monitoring. Exits: secondary IPO, trade sale, on-sell to another PE fund. Needs predictable cash flows; high risk if they wobble.

Why restructure: three families — business (expansion via M&A/JV, or contraction), financial (LBO, debt-for-equity swaps), organisational. Contraction often *creates* value by reversing the diversification discount.

18 · Corporate Distress

LEC 10

Distress ⊃ insolvency: financial distress spans events up to insolvency (e.g. a covenant breach); insolvency = can't pay debts as they fall due; in AU "bankruptcy" = personal insolvency.

Two insolvency tests: stock/balance-sheet (assets < debt) and flow/cash-flow (can't meet payments). Near distress, equity = a call on V ⇒ two distortions:

- **Asset substitution** — pick a risky, even −NPV, project to shift value from debt to equity
- **Debt overhang** — reject a +NPV project because the gains flow to creditors

Resolution: reorganisation as a going concern (AU Voluntary Administration; the administrator proposes a Deed of Company Arrangement — reject ⇒ liquidation) vs liquidation (sell assets for salvage). *APR*: liquidation costs → secured → employee entitlements → unsecured → shareholders (often violated in practice).

18b · Altman Z-Score

ON SHEET

Z

$$= 3.3(EBIT/TA) + 1.0(Sales/TA)$$
$$+ 1.2(NWC/TA) + 1.4(RE/TA)$$
$$+ 0.6(MV\ equity/BV\ debt)$$

Z < 1.81 high insolvency risk; Z > 2.99 low (a grey zone between). **Note** it is MV equity over *BV* debt. **Ex:** US Composite scored Z = 5.214 ⇒ safe.

Traps: mixing stock vs flow insolvency; getting the coefficients/ratios wrong; both distortions arise *because equity is a call* — limited downside, unlimited upside.

19 · Risk Management

LEC 11

MM benchmark: in perfect markets, hedging is irrelevant — investors hedge themselves. So hedging adds value only via frictions.

Six reasons it can add value:

1. Convex taxes — stabilising income lowers expected tax
2. Cuts bankruptcy/distress costs
3. Avoids underinvestment (low CF ↔ good projects)
4. Managerial self-interest (undiversified)
5. Cleaner earnings signal
6. More debt capacity → more tax shields

Tools: derivatives (hedge net exposure, minimally — it's costly) + natural hedges (produce where you sell; borrow in the revenue currency).

Sources of risk: market (interest/FX/commodity — derivatives), commercial/operational (not derivative-hedgeable), external-event (insurable). **Trap:** MM makes hedging the *benchmark*, not "always irrelevant"; hedge net, not each gross exposure.

20 · Top Exam Traps

LOSE-NO-MARKS

- $t_e \neq t_c$ under imputation; gross up by ÷(1−t_c)
- NPV vs IRR conflict → **trust NPV**
- MM no-tax vs with-tax are different conclusions
- Discount a lease at $k_d(1-t_c)$, not the project rate
- FCF-to-firm uses WACC; FCFE uses k_e
- Subtract net debt for equity value; discount the TV back
- Abandon = put; b = post-merger ownership fraction
- Sunk costs out; opportunity costs & ΔNWC in

Side-2 Formula Belt

MEMORY HOOKS

$$WACC=k_d(1-t_e)(D/V)+k_e(E/V)$$
$$t_e=t_c(1-\lambda)$$
$$Div_{gross}=Div_{cash}/(1-t_c)$$
$$Frank=t_c\cdot Div_{gross}$$
$$\beta_L=\beta_U[1+(1-t_e)D/E]$$
$$V_L=V_U+t_eD\ \text{(-PV distress)}$$
$$RO=NPV_{w/}-NPV_{w/o}\ \text{(abandon=put)}$$
$$\text{Cash NPV}=Gain-(\text{cash}-V_T)$$
$$\text{Scrip NPV}=Gain-(b\cdot V_{AT}-V_T)$$
$$Z=3.3(EBIT/TA)+1.0(S/TA)$$
$$+1.2(NWC/TA)+1.4(RE/TA)+0.6(MVE/BVD)$$

Exam Discipline

FINAL WORD

Read each question for **which rate** the cash flow needs. Write the formula first, substitute second, state the decision last. Budget time by marks; bank the easy short-theory parts early, and keep partial working visible so method marks survive an arithmetic slip.