**FM Wordy Notes**

**Section 1: NPV, Investment Appraisals and Risks**

**NPV considerations**

* Are all figures correct, or at least reasonable? Is the timescale correct?
* Have amounts been allocated correctly to different years?
* Has tax and inflation been taken account of?
* Is it right to use an unchanging discount?
* Have costs been correctly excluded – eg apportioned fixed costs and sunk costs?
* Does the positive NPV obscure the fact that a large upfront cash is required and therefore the project may not be feasible?
* Has the value of real options been considered

**Sensitivity analysis and simulation**

* Sensitivity analysis strengths -> easy, judgemental, identifies key factors
* Sensitivity analysis weaknesses -> no final answer, unrealistic to just change one variable at a time, probability is ignored
* Simulation strengths -> range of possible outcomes with related probabilities, useful where analytical approach is not possible
* Simulation weaknesses -> no final answer, time-consuming, requires sophisticated computer programme and is expensive to design, requires assumptions to be made re: probability distributions and relationships between variables

**Dealing with uncertainty**

* Set a minimum payback period for projects
* Subjectively increase the discount rate to submit the project to a higher ‘hurdle rate’, i.e. so fewer projects will have a positive NPV
* Make prudent estimates of outcomes and assess worst case scenarios; compare this against best case scenario to obtain a range of outcomes which can then be assessed in terms of probability
* Use sensitivity analysis to work out the margin of safety
* Sensitivity = NPV of project / PV of uncertain cash flows

**Sensitivity analysis calcs**

* Materials prices -> find the PV of materials costs and then find the NPV of the project as a percentage of the material costs
* Annual sales volume -> find the NPV affected by a change in sales volume, requiring analysis of PV of revenue, variable overheads, direct labour and revenue; then find the NPV of the project of the PV of the above factors
* Annual sales revenue -> find PV of revenue and then find the NPV of the project as a percentage of the PV of revenue
* Product life -> slightly different approach; set up an equation that states that 0 = outlay + PV of inflows (in annuity at the cost of capital and the project length in years). So for a project with outlay of £500k and annual undiscounted cash flows of £122k, will need to divide the 500 by 122 to give an annuity factor of 4.1 in order to generate 500k over the project life. Finally use the discount tables to see what number of years gives an annuity factor closest to 4.1 for the relevant cost of capital. When we compare this number in years to the project period, the difference will be the margin of safety on project life

**Expected Values**

* Gives a final answer, reduces information to a single number, averages are easy to understand
* The expected value itself may not be a possible outcome, in fact probably isn’t, only appropriate where there are multiple choices to be made over time, it doesn’t work at all for a one off choice; ignores risk as it does not indicate the spread of results – an average gives no indication of risk associated with the spread of possible outcomes

**Replacement analysis calculations:** *work out the optimal economic life*

* Weaknesses/limitations -> obsolescence: the calculation does not take account of the fact that the replacement asset will not be the same as the original and the fact that speed of technological change may mean faster replacement is required; inflations changes costs, taxations is normally disregarded, production does not continue in perpetuity
* Inflation can be factored in but if inflation affects variables is different ways it cannot be done accurately. If all items are equally impacted on by inflation, can exclude it from the calc

**Potential Director/Shareholder conflicts**

* Shareholder wealth maximisation vs director salary maximisation do not fit together well, likewise shareholder wealth and director security, prestige, power, work conditions etc
* Directors have to consider more stakeholder groups than just the shareholders – e.g. government, institutional investors, the public etc
* Shareholders may be diversified through their market portfolios but directors do not have multiple jobs so less inclined to raise debt and risk bankruptcy of the company
* Directors look largely at the short term vs long term view of the shareholders
* Shareholders will want dividend pay-outs, the directors will want to retain profits
* Directors hold more information than shareholders

**Strengths and weaknesses of different investment appraisal methods**

* Payback period – simple and quick, considers risk to a degree but it is over-simple and does not consider the time value of money, nor does it consider cash flows after the payback point has been reached so does not factor in the total return. Use for: initial filtering of several possible project options
* ARR – uses profit to measure so consistent with return on capital employed, uses balance sheet values and is easy to understand but again ignores the time value of money, does not maximise wealth and a higher ARR% is not necessarily the best in absolute terms: use for: don’t use if other methods are available
* NPV – best method, considers the time value of money, it is an absolute measure and all cash flows are considered; however the discount rate is difficult to estimate and it is hard to be accurate about all inflows and outflows, whilst the model also unrealistically assumes all flows occur at the end of the year, not steadily through the period: use for: whenever possible as it is the technically strongest appraisal technique
* IRR – also considers the time value of money, it is not dependent on the discount rate chosen and all cash flows are considered; however it may conflict with the NPV and assumes cash is reinvested at the IRR which may not be possible. Use for: occasions where NPV includes too many assumptions to be accurate as it is easier to use and easy to communicate in practice

**Real Options Mnemonic - FLATFOG**

* FL – flexibility in use of inputs and raw materials; a more expensive option may increase flexibility, e.g. a machine that can run off electricity or gas, allowing the company to pick the better option as appropriate
* A – abandonment such that marketable machinery is a benefit, as is a project with low exit costs. Some projects also have inbuilt options to reduce capacity and temporarily suspend ops
* T – timing whereby any option to delay a project is a benefit, a project is more valuable if it can take place at multiple times as it allows a company to ‘wait and see’. Only relevant if this more than offsets the loss of business/profits during the delay – effectively another flexibility option
* FO – follow-on, so that an initial project with a low or even negative NPV may allow a much more profitable one later on
* G – growth through JVs, strategic alliances and so on and allows a project to start small and then expand if the market conditions suit

**List of Political and Cultural Risks**

* Government stability, economic stability, inflation, international indebtedness of the project location country, financial infrastructure, import tariffs, remittance restrictions, seizure of business assets by the government, investment incentives: deal with by: negotiating with the host government, taking out appropriate insurance, outsourcing and producing locally, share controls with the locals through the management structure, invest locally, obtain finance locally so that the host banks are stakeholders
* Different consumer and customer practice, different business practices, media and distribution systems, national cultural differences
* Considerations for an overseas subsidiary -> local finance costs, tax, restrictions on remitting dividends, flexible repayments, access to capital to optimise gearing

**Section 2: Cost of Capital, Valuations and Growth**

**Reasons for the actual ERP differing from the TERP**

* Investor sentiment regarding the company’s future changes
* Rights are not fully taken up, pushing down the share price
* The overall stock market conditions change
* The market may use a different valuation method to the company
* The market may not have perfect information about the new project
* The market may not be efficient and/or reliable

**Rights Issues pros and cons**

* Pros -> reduces gearing levels, gives flexibility on when to pay out dividends
* Cons -> EPS may fall, expensive, high issue costs and shareholders may react badly; if the existing shareholders do not exercise their rights their control is diluted, riskier than debt so the shareholder will demand a higher return, may not be possible in an unlisted entity as shareholders may not have the funds and may not be able to sell the shares later

**Loans as a source of finance pros and cons**

* Pros -> existing shareholdings are not diluted, less risky than shares as cost is lower, they are tax deductible and have minimal issue costs, they may enhance EPS
* Cons -> restrictions and pressures of covenants in loan agreements, exposure to interest rate risk if variable, interest payments must be made, unlike dividends which are optional

**Debt as a source of finance pros and cons**

* Pros -> investor accepts a lower interest rate because of the possibility of converting to shares so may also be attractive to investors interested in acquiring shares in future, short term gearing introduced to possibly reduce WACC, if converted there is no cash to pay at redemption which there is with debentures when the principal has to be repaid to the investor, if converted also results in a relatively cheap issue of new shares
* Cons -> shareholder control may be diluted if converted

**Bonus Issues pros and cons**

* Pros -> no cash outflow, increase number of shares without affecting shareholder wealth or company’s market value, unit cost per share falls making them more marketable
* Cons -> EPS falls, cash retained must be reinvested appropriately and must make a gain, otherwise it should just be paid out to shareholders before inflation makes its value fall

**Scrip dividend advantages**

* Avoids liquidity problems
* From a tax perspective the shareholder swaps income for a capital gain which will be beneficial if they are a higher rate tax payer
* In an enhanced scrip issue, where the shares are offered to a higher value than the cash alternative, then the shareholder will be better off as a result

**CAPM**

* If thinking about CAPM, always start from the premise that the objective is to maximise shareholder wealth
* We should also assume that these same shareholders hold a diversified market portfolio so have diversified away the risks relating to individual companies
* A new project is now going to be added to their portfolio so what we need to consider is how the new project will affect their market portfolio, not the individual company
* Therefore the CAPM formula flexes up the general risk premium in the market (Rf –Rm) by increasing the Beta value for the specific risks of the relevant sector – at this point we can now examine the impact of holding shares in that sector
* This general risk premium (of Rf –Rm) already exists and investors expect to receive this return -> by diversifying their portfolios shareholders have pushed the return from this demanded from this sector right down to rf –rm, so when a new project is added in we then need to look at how the new project compares to the existing position -> this is the function of the beta value
* CAPM weaknesses -> assumes all shareholders are fully diversified and hold a full market portfolio, shareholders are not the only stakeholders in the firm, the capital market is assumed to be perfect (it isn’t), it is very difficult to estimate the beta of a new project and impossible if not listed and the risk free rate is also difficult to estimate; investors are also assumed to care only about the expected return and the variance in the return of the asset
* Also need to consider investors in reality borrowing and lending at a different risk free rate not the same one, and implications of tax
* Stakeholders like managers and employees cannot diversify their jobs

**Earnings Retention Model**

* Fundamental assumptions -> the value of a share is the PV of future dividends plus capital growth; dividend growth occurs when profits are retained and reinvested
* Problems with the model – it relies on accounting profits, with subjective elements and open to manipulation, it assumes R and B within the model are constant, inflation will impact on the accounting rate of return if assets are valued at historical cost as profits and therefore R rise as a % of book value due to any inflation, also assumes that all new finance comes from equity (retained profits)

**Dividend Valuation Model**

* Assumes that the share price grows at the same rate (g) as the dividends
* Problems with the model – g has to be less than Ke, else the formula gives an impossible figure -> if G = Ke we get a division by 0 which is impossible, if G > Ke, we get a division by a negative number which would give a negative share price by the formula; G must either be assumed to be constant or to be 0, varying growth rates cannot be factored into the equation
* It is also assumed that shares have value because of dividends, which is not true if shareholders are more interested in capital growth
* Historic growth rates are assumed to continue into the future
* Earnings are not considered at all in the model, despite being key to long term growth and some stock market valuation methods
* DVM also suggests a single share price when in fact this fluctuates day-to-day

**Bonus Issues and the Earnings model**

* We need to assume that the bonus issue has always been in place, by effectively ‘going back in time’ and pushing dividends per share down to allow for the higher number of shares – do this before calculating the growth rate over time
* If this is not done, the growth rate will be wrong /negative as later years will have a lower dividend per share purely due to the bonus issue, rather than because of a genuine decrease in earnings

**Advantages of Convertible debt**

* To the investor -> low risk security, ranking highly in the event of company failure and a chance to study the share price before deciding whether or not to invest in equity
* To the issuing company -> lower rate of interest than for equity finance, encourages investors by offering them a potential share of future profits, short-term gearing is introduced, cash will not need to be repaid if they convert to equity, equity can be issued more cheaply on conversion than for a normal share issue

**The WACC curve**

* Curve will be smile shaped
* Equity is the most risky source so requires the highest return
* Shareholders do not initially care about the addition of debt, bringing down WACC due to tax deductibility
* Eventually debt increases to the point where both financial and bankruptcy risk come into play
* Extending this premise, very high levels of gearing will bring the WACC back up again due to the higher risks involved
* M and M – with no bankruptcy risk and no taxes, the WACC curve will be a horizontal line -> higher Ke due to higher debt is exactly offset by lower Kd being introduced

**Requirements for WACC to be appropriate**

* Historical proportions of debt and equity are unchanged
* Operating risk of the firm must not change
* There must be no project specific finance

**Gearing and Ungearing: Principles and Ideas**

* Beta is designed to reflect project risk by factoring in inherent risk present in a particular sector
* This can be seen as a ‘pure’ risk; in order to access this we need to strip out the risk created by the average financing/gearing decisions of companies in that same sector -> if these are still factored in they will ‘get in the way’ of the risk created by the project itself
* Therefore we need to ungear the beta for the specific market by removing the effect of financing choices on that beta, giving us a ‘pure’ operating beta
* Beta then needs to be regeared for the specific company we are looking at
* The new beta then consists of general sector risk plus specific financing risk created by the decisions of the company in relation to specific projects

**Benefits of knowing the cost of capital of your company**

* Assuming the primary objective is to maximise shareholder wealth, CoC needs to be known so the correct projects can be chosen based on NPV, which requires us to know the cost of capital to determine which projects provide positive discounted cash flows
* CoC should reflect returns investors expect to receive, based on risks facing the company, and they want the company to invest in projects yielding more than this return – i.e. if managers only accept projects yielding more than the CoC, they are only accepting projects the investor would want them to accept
* However it is hard to estimate -> it is assumed the value of an ordinary share equals the discounted PV of future dividend stream but the market may be valuing the shares along different lines, eg using earnings; listed entities also tend to be financed by complex instruments but estimating the true cost of things like convertible loan stock is difficult, likewise any foreign currency instruments

**Issues to consider regarding dividend policy**

* Pecking order theory -> retained earnings is the cheapest source of finance, dividends use this scarce resource up
* M and M theory -> the pattern of earnings is irrelevant over time
* Uncertainty -> some investors like the certainty of having guaranteed dividends now
* Signalling -> stable or increasing dividends help to maintain investor confidence in a company; dividend cuts will undermine confidence
* Clientele -> the company may have investors already who are more interested in income, others who prefer capital
* Tax -> depending on what rate of tax they pay, some investors will prefer income, others capital gains
* Manufacturing dividends, as per M and M -> by selling shares; there is a difference between receiving dividends from a dividend-paying share versus selling non-dividend-paying shares
* Reducing retained earnings by paying out dividends means directors will no longer have an easy resource available and so need to justify their new investments, meaning they lose control
* Changes in dividend policies may alienate shareholders

**Systematic v Unsystematic risk**

* Unsystematic risk is unique/specific risk relating to an individual project or company. This can be eliminated by diversifying – if the investor acquires shares in many companies, his risk no longer relates to individual companies and now relates to the whole market
* Systematic risk is risk inherent in the market, i.e. risk caused by the economic system. This risk cannot be diversified away and is therefore the most significant risk to diversified investors

**Organic Growth vs Acquisitions**

* Pros of organic -> costs of growth are spread over time, often cheaper, change occurs slower so less disruption to behaviour, culture and system; synergies claimed by acquisition as an advantage often do not materialise so organic growth may not lose out on anything and avoids acquisition costs
* Pros of acquisitions -> potential synergies although do not always occur, risk is reduced through diversification, competitor is eliminated, growth may be quicker and market share can be increased, organic may give too many barriers to entry and may be more risky than acquiring an already established company, plus as per the above bullet the organic process may be too slow

**Types of Synergies**

* Administrative savings
* Economies of scale
* Common investments
* New technologies and R&D savings
* Leaner management structures
* Access to underutilised assets

**Data suggestions on synergies**

* That they do not just happen and must be actively pursued
* That shareholders in the target company are the only consistent winners and shareholders of the purchaser often lose out by paying too much and/or incurring professional fees, where these additional costs are subsequently not offset by synergies
* Possibly a contributing factor for this is that acquisitions take place in the interests of managers and not shareholders

**3 main ways of paying for an acquisition**

* Cash -> advantages are the guarantee of an amount received, potentially an appropriate use of surplus cash and no dilution of control; cons are that more cash may need to be found, there may be tax issues and the shareholders of the target reduce their proportionate shareholding interest so may be opposed
* Share-for-share exchange -> cash and liquidity is preserved, shareholders of the target company retain their interest and there are no immediate tax issues; cons are that issue costs may be high, existing shareholders in the purchasing company have their shareholdings diluted and the value received is unknown
* Loan stock for share exchange -> advantages are that control of the purchasing company’s shareholders is not diluted and the loan holder gets a more certain return than they would do for shares; cons are an obligation to pay interest, equity may be preferred and increased gearing (though this latter point could be good if it brings the company nearer their optimum gearing)

**Benefits of using the EuroMarket as a source of funds**

* Lower spread between borrowing and lending due to stronger regulations
* Lower borrowing and low issue costs
* No security is generally required on loans
* Interest is paid gross
* Securities can be sold easily on secondary markets
* Drawdown dates are flexible
* Easier to raise large sums quickly
* The main drawback is that they are at floating interest rates, exposing the business to interest rate risk

**Table comparing different funding forms**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristic | Ordinary shares | Preference shares | Secured debentures/loans | Unsecured debentures/loans |
| Security of repayment of capital | Rank after creditors and preference shares | Rank after creditors but before ordinary shares | Secured over assets | None |
| Voting rights | Yes | Yes but only if dividend is in arrears or there is a proposal to change the legal rights of shares | No | No |
| Income payment obligation of company | Dividends are discretionary | Fixed maximum. Must be paid before the ordinary dividend | Fixed percentage | Fixed percentage |
| Obligation to return capital and amount | Only if liquidated | Fixed amount where expressly redeemable, otherwise as per ordinary shares | Fixed percentage | Fixed percentage |
| Tax deductibility | No | No | Yes | Yes |
| Issue costs | Up to 15% of finance raised | Up to 15% of finance raised | Cheap relative to equity | Cheap relative to equity |

**Reasons to divest or sell off a company**

* Lack of fit with other companies held
* A subsidiary may be too small to warrant management’s time
* The individual parts of the company may be worth more than the combination if the combination is being discounted as sometimes seen in a conglomerate
* One part of a business may be trading poorly and selling is cheaper and quicker than liquidating
* The parent company may need to improve its liquidity so needs to raise cash now
* Buying and selling as part of a strategy of changing risks and rewards over time

**MBOs and MBIs**

* Management buyouts -> managers who already work for the company buy the company
* Management buy-ins -> external managers buy into the company

**Section 3: Hedging narrative questions**

**Reasons to use an interest rate swap**

* Lower interest rates than would be possible alone
* Gives a better match of assets and liabilities
* Allows access to market rates which would not otherwise be possible
* Hedge exposure to risk by switching between fixed and floating
* Restructure debts without incurring new loans and associated fees
* Speculation element -> gamble on the other type of deal being better
* Available for longer periods than other hedging methods
* Arrangement costs are often significantly less than terminating the existing loan and taking out a new one
* They can be arranged for tailor-made amounts and periods and are reversible

**Risks of an interest rate swap**

* The other party may default
* An unfavourable movement in interest rates will see one side lose out as the rates change
* Transparency risk -> may undermine the clarity and transparency of company’s financial statements

**Issues to consider with Interest Rate Options**

* For both the OTC and Traded options the premium may well be high
* OTC options: can be tailored, used over longer periods, may only be exercisable at a particular time and are non-transferrable
* Traded options: can be exercised any time, are straightforward to use and can be sold early if an early exit is needed

**Disadvantages of Currency Options**

* The cost is about 5% of the total foreign currency covered
* The option must be paid for as soon as it’s bought
* Tailor made options lack negotiability
* They are not available for less commonly used currencies

**Key characteristics of a forward contract**

* The amounts involved are fixed in advance
* The contracts are binding which could be a problem if one side fails to pay or the money is ultimately not needed
* The contract is customised and tailored to the user’s needs
* An OTC forward involves the risk that the other side will default

**Key characteristics of futures contracts**

* Also legally binding
* They are for standardised amounts so their values and maturity may not match the requirements exactly, leading to basis risk being involved
* Standardisation gives rise to lower transaction costs
* The deposit required is small and much lower than for a tailored forward or option
* There is a ready market so need to identify a counterparty
* Only a limited number of currencies are available and if neither currency is the US$ they may become complex
* There is no counterparty risk, unlike with a forward contract, as the exchange guarantees that both sides will honour their agreements

**3 Currency Risks**

* Transaction risk -> that adverse short term movements during the ordinary course of business impact on value
* Economic risk -> that exchange rates movements over the longer term impact on business value
* Translation risk -> that exchange losses arise when translating the transactions of overseas subsidiaries into the parent’s home currency (an accounting risk)

**Ways of managing economic risk**

* Diversify operations worldwide
* Use marketing and promotional management to promote diversification
* Product management – do not release a high risk product if there is uncertainty over economic risk
* Have an effective pricing strategy
* Production management – set up production in countries with lower relative production costs

**Underlying factors determining the value of an option**

* Price of the underlying security
* The exercise price of the option
* General level of interest rates. If interest rates are high, it is not good to have money tied up in the premium which is payable upfront and it would be better to keep the cash then buy the underlying asset later. The future value is being discounted to a greater extent, reducing present value. A higher rate reduces the value of a call option
* Time to expiry – longer time period makes a call option more valuable
* Volatility of the security

**Reasons to justify NOT hedging**

* Costs may be too high
* The amount being hedged may be immaterial
* The company may not want to prevent itself from participating in upside risk
* The portfolio effect – the company may already have products/shareholdings which reduce risk
* If shareholders are fully diversified, theoretically there is no need to hedge

**Hedging methods not involving forwards, futures or options**

* Change the invoicing currency
* Matching of payments and receipts
* Matching assets and liabilities
* Leading and lagging payment – effectively speculating without doing so officially through a hedge
* Maintaining currency accounts
* Using a money market hedge

**Non-currency risks associated with overseas trade**

* Physical risk
* Credit risk
* Trade risk if the customer cancels or does not accept the goods
* Liquidity risk
* These risks can be reduced through banks, insurance companies, credit reference agencies, government agencies such as the UK Export Credits Guarantee Department
* Alternatively a transfer of risk to a logistics company could be a strategy -> e.g. contract with the courier to ensure the courier shares part or all of any losses incurred

**Hedging Techniques summary table**

|  |  |  |  |
| --- | --- | --- | --- |
| Characteristic | Forward | Money Market | Future |
| Tailored | Yes | Yes | No |
| Secondary market to unwind | No | Yes | Yes |
| Transaction cost | Via spread | Via spread | Brokerage fees |
| Complexity | Low | Medium | High |
| Management costs | Low | Medium | High |
| Volume/popularity | Small/medium | Banks | Growing usage |

**More Investment appraisal points**

**Stakeholder conflicts**

* Return: shareholders want return to be maximised but director may make decisions which do not lead to this
* Risk: directors may take more or less risk than shareholders wish
* Multiple stakeholders: this will bring with it multiple objectives
* Satisficing: if a firm attempts to do just enough, this may conflict with shareholder objectives regarding return and risk

**Different replacement costs**

* Relevant costs of raw materials used regularly in firm projects and therefore needing to be replaced when used up -> market price (i.e. replacement cost)
* Relevant costs of raw materials in stock but which will not need to be replaced after the project is completed -> scrap value, as this is the value foregone if used on the project instead of being sold for residual value now

**Deprival Value**

* LOWER of replacement cost and recoverable amount
* the recoverable amount is the HIGHER of value in use and NRV
* So if the company were deprived of the asset, it would lose the higher of the value from being used and the resale value
* Where recoverable amount < replacement cost, the recoverable amount is the deprival value because the asset would not be replaced if the firm could no longer use it
* Where recoverable amount > replacement cost, the replacement cost is the deprival value. The asset should be replaced because the item is generating more value than it costs to replace it and if the company were deprived of the asset they would have to replace it at the replacement cost

**Key considerations in determining whether to invest overseas**

* Market attractiveness – forecasts for demand, growth rates
* competitive advantage – prior experience, understanding and language barriers
* risk – political stability, government intervention and similar external influences

**Foreign Government actions to prevent exploitation**

* quotas
* tariffs
* barriers to entry
* restrictions
* nationalism
* minimum shareholdings

**Techniques to deal with political risk**

* negotiate with the host government to obtain concessions and agreements
* insurance – e.g. through the Export Credit Guarantee Department
* production strategies – control patents which can be enforced internationally; produce locally to give locally to give local enterprise ‘buy in’
* management structure – through joint ventures or ceding control to local investors

**Factors to consider when choosing finance types for an overseas subsidiary**

* local finance costs and subsidies
* taxation systems
* restrictions on dividend remittances
* possibility of flexibility in repayments which may arise from a parent/subsidiary relationship
* access to capital

**Non-financial factors impacting on shareholder value**

* compliance with current and future legislation
* impact on staff morale
* impact on suppliers and customers
* reputation of the organisation
* sustainability

**Narrative Chapter 3: Risk, Capital Markets and Sources of Finance**

**Risk and uncertainty**

* risk can be evaluated and quantified in statistical terms because the probabilities are known
* strictly speaking business decisions involve uncertainty not risk because the probability of outcomes is unknown

**Techniques to deal with uncertainty**

* set a minimum payback period for projects
* increase the discount rate subjectively to make the project have to clear a higher hurdle rate
* make prudent estimates of outcomes to assess the worst possible outcomes
* assess both the best and worst possible outcomes to obtain a range of possible outcomes
* use sensitivity analysis to measure the margin of safety (sensitivity = NPV of project/PV of uncertain cash flows)

**Calculation of product life**

* set up this formula to find the sensitivity: 0 = (outlay) + PV of inflows (x annuity factor at cost of capital and project length in years)
* e.g. a project has an outlay of £500k and annual undiscounted cash flows of £122k, then need to multiply by an annuity factor of 500/122 = 4.1 to generate the £500k over the project life
* now using the discount tables, need to find the number of years which is closest to an annuity factor of 4.10 when the project’s cost of capital is used which is about 5.5 years for a CoC of 10%

**Amending NPV calculation where sensitivity calculation is required**

* separately calculate the PV of factors like revenue, direct costs, variable costs etc rather than finding one overall NPV
* so that PV corresponding specifically to these factors can be separated out in the equation
* if a project life calculation is required then find the annual undiscounted cash flow, as in the example above

**Aggressive and Defensive Shares**

* aggressive shares -> have a high beta meaning their price moves significantly as the market moves
* defensive shares -> have a lower beta, their price is less volatile

**Calculating the ex-rights price of a share after a new project**

* (market value of shares pre-rights + rights proceeds + project NPV)/number of shares ex-rights
* OR: PV of new total dividends/number of shares ex-rights
* If the NPV is not given then we assume it is 0

**Considerations when making a rights issue**

* Issue costs – percentage cost will fall as higher amounts are raised
* Shareholder reactions
* Control – existing shareholders should not be affected unless a large number decide to sell their rights
* Unlisted companies – it may be hard for shareholders to sell rights and therefore not an attractive option

**Offers for sale and direct offers for subscription**

* Offer for sale uses an issuing house as an agent in the middle
* Direct offer/offer for subscription issues shares directly to the public

**Convertible debt benefits**

* To the investor: low risk and it ranks highly in terms of being reclaimed in the event of failure; there is also an opportunity to study share prices before deciding whether to invest
* For the issuing company: lower rate of interest needs to be paid; encourages possible investors by offering a share in future profits; introduces short-term gearing; avoid redemption problems as there is no need to repay cash if converted to equity; equity can be issued cheaply if the option to convert the debt is taken up

**Loan stock with warrants**

* An additional payment compared with convertible debt must be made to subscribe for shares
* The original debt is not extinguished
* This type of debt is used so that a lower interest rate needs to be paid, by offering the possibility of future subscription for shares at a pre-determined price
* If the issuing company breaches a warranty then there will likely be a default on the loan which would normally trigger a demand for full repayment

**Key considerations for a loan investor**

* Is the company incorporated?
* Is the company legally allowed to borrow?
* Is the signatory to the loan authorised?
* Is the loan within the provisions of the Memorandum and Articles of Association
* Does the loan breach any existing loan agreements?
* Do the accounts show a true and fair view?
* Is there an impending court case which could affect the company’s financial position?

**Loan guarantees and loan covenants**

* Guarantees -> parent guarantees a subsidiary, subsidiary guarantees a parent with an upstream guarantee, or members of a JV become guarantors for one another
* Loan covenants -> provision of information through financial statements or management accounts; negative pledges for example a pledge not to use assets as security on other loans; financial covenants for example a commitment to maintain certain accounting ratios; restrictions such as on taking on new debt

**Determinants of a Company’s Cost of Finance**

* Risk free rate of return
* Reward for the risk taken by investors in advancing funds to the firm
* Hence why equity holders who take more risk expect higher rates of return

**Business and Financial risk**

* Business risk -> the variability in earnings before interest and tax associated with the industry in which the firm operates and so determined by general business and economic conditions
* Financial risk -> additional variability in profits due to having fixed interest debt in the capital structure, primarily faced by equity holders but also by debt holders at high levels of gearing. Financial risk includes liquidity risk, interest rate risk, currency risk etc.

**Operating and Financial Gearing**

* Operating gearing -> extent to which a firm’s operating costs are fixed rather than variable, implying a high break-even point
* Financial gearing -> extent to which debt is used in the capital structure, measured as the ratio of debt to equity or alternatively by looking at interest cover

**Effects of increased financial gearing on the WACC**

* Increased risk increases cost of equity which tends to increase the WACC
* Proportion of debt increases and since debt has a lower cost of capital than equity, this will tend to decrease the WACC
* i.e. equal and opposite pressures on the WACC

**Direct costs of bankruptcy**

* assets are sold at < going concern value. Liquidation costs, redundancy costs, distress prices for assets can lead to assets leading less than their economic value
* debt holders bear this loss in value
* both debt and equity investors will ask for higher rates of return from highly geared companies
* links into the M and M with tax equation: MV of firm = value if equity financed + value of tax shield – bankruptcy costs

**Manager vs. debt holder conflicts**

* dividends -> paying cash will please shareholders but increase risks for debt holders
* managers may hide poor results and/or play for time, ultimately endangering debt holders
* managers may use funds intended for a safer investment on a riskier one
* managers may arrange further loans secured on assets, reducing asset available for debt holders

**APV calculation**

* first calculate a BASE NPV using an ungeared cost of capital as a discount rate
* then calculate the PV of the tax shield using the cost of debt as the discount rate
* this can be made more tricky when element one requires the ungeared cost of capital to be calculated (see next heading)

**Equity Beta and Asset Beta**

* equity beta = asset beta x (1 + debt proportion x 0.79/equity proportion)
* the equity beta is the systematic business risk (the asset beta) increased by the relative share of debt in the company’s finance structure, represented by the (1 + D(1-T)/E) formula. This section of the formula creates a function so that the higher the market value of debt relative to the market value of equity, the more the asset beta is increased to find the equity beta

**M&M and irrelevance of dividend payments**

* this argument can be countered by the following points which suggest the timing of payments is actually relevant:
* bird in the hand argument where uncertainty is removed by paying a constant dividend stream
* dividend signalling – paying a regular dividend shows confidence in the company
* clientele – look at the profile of the shareholders in the company, some may prefer current income and taxation
* cash – cash paid as a dividend is not available for investment elsewhere
* agency theory – paying dividends uses up investment resources and forces managers to justify their further investment activities
* the evidence actually suggests that share value and dividend policy are not closely related and therefore the best strategy is probably to decide a dividend policy and stick to it, with slight increases over time

**Scrip Issues and Enhances Scrip Issues**

* the company avoids liquidity problems with a scrip issue
* the shareholder swaps income for capital gains which may be advantageous from a tax perspective
* with an enhanced scrip issue, assuming not all shareholders take the enhanced scrip issue, then the shareholder will swap income for a larger capital gain

**Problems in underwriting a share issue**

* cost -> payable even if the underwrite is not needed to take up any securities
* shares will ‘hang over’ the market -> underwriters will probably sell unwanted shares as soon as the demand improves but this will leave the share price depressed for some time and until underwriters have sold all their shares that they do not want to keep the price will stay lower

**Types of International finance**

* Eurocurrency market -> short-term borrowing and lending by banks in their non-domestic currencies
* International bond market -> bonds issued by large companies and governments sold to international investors. These may be issued on behalf of companies by investment banks and may sometimes be listed on the stock market
* International syndicated loans -> for medium and long-term loans where a syndicate of international banks lends to a borrower. Some of the loan may be marketed, allowing other investors to acquire an interest

**Considerations when choosing between international and domestic markets**

* Eurocurrency loans generally need no security; domestic market borrowing is likely to involve fixed or floating charges
* International bonds usually pay interest gross without deducting withholding tax, which provides cash flow advantages. Domestic bonds usually deduct tax first
* International bonds are also easy to sell on the secondary market, domestic bonds are not
* Often easier to raise very large sums quickly on international markets than on the domestic market because the pool of potential large investors is larger

**Behavioural Finance**

* The argument that investors are subject to various types of irrational behaviour and this explains why share prices tend to overreact to past price changers
* This is the alternative model to the efficient market hypothesis
* Types of irrational behaviour are listed below:
* Overconfidence -> investors overstate their trading ability and ignore areas where their knowledge is missing, overestimating the accuracy of their forecasts. They tend to attribute bad performance to luck but good performance to their own skill
* Representativeness -> information is presented in a misleading way, e.g. media reports that a fall in an index is like the Wall Street Crash etc., whereby a similarity is recognised but many key differences are ignored
* Narrow framing -> investors focus too much on one of their shares, not the whole portfolio. They also focus too heavily on the short-term rather than the long-term
* Miscalculation of probabilities -> investors attach too low a probability to likely outcomes and too high a probability to unlikely outcomes
* Ambiguity aversion -> investors are afraid of areas where they do not have good information and focus on the familiar instead – e.g. avoiding overseas shares
* Positive feedback and extrapolative expectations -> positive feedback investors will buy a share after the price has risen and sell after prices have fallen – extrapolating that the trends will continue either way
* Cognitive dissonance -> investor maintains long held beliefs so continues to hold this position even if evidence contradicts the belief. This leads to the ‘post-earnings announcement drift’ which shows that reaction to unexpectedly good/bad earnings is typically slower than the efficient markets hypothesis may suggest
* Availability bias -> investors pay too much attention to one event because it is freshest or most prominent in their mind – usually an event that has been recently announced
* Conservatism -> investors tend to be naturally conservative and resistant to changing an opinion; they may underreact to profits being higher than expected, or overreact to profits being lower

**Narrative questions: Growth, Valuations and Business Plans**

**Reasons to undertake a valuation**

* To establish the terms of a merger or takeover
* To help make share purchase/sale decisions
* To value companies listing on the stock exchange
* To value shares sold in a private company
* For tax purposes
* For divorce settlements
* To value subsidiaries for disposals, e.g. for a management buyout

**Discounted Cash Flow model**

* Regarded as the best valuation approach
* Problems include estimating future cashflows, particularly in regards to synergies
* Estimating the discount rates is also problematic
* The time horizon also needs to be taken into account -> how long do we assume the cash flows last? Do we use a perpetuity calculation

**Valuation of quoted companies**

* Existing market value should normally be established as a minimum – as the shareholder will surely accept nothing less than the current MV
* There will be a premium for bulk buying or for establishing control

**Income valuations**

* Need to add the estimated NRV of surplus assets to the valuation
* Trade investment income should be included in earnings but not non-trade investments
* Dividends should be excluded from income
* The market value of investments needs to be added at the end
* Market rent on freehold premises needs to be adjusted for and the value of the freehold added separately at the end
* Director remuneration should reflect a market approach
* Market value of preference shares and debt should be deducted to derive the value of equity

**General considerations when valuing a company**

* Will key employees leave post-acquisition?
* Do key employees have a long notice period or high payoff clauses?
* Are there restrictive covenants?
* Is there more than one bidder? If so the price will be driven up

**Financing MBOs**

* Junk bonds
* Mezzanine debt -> allows the debt holder to gain some equity participation, either through an option to convert or by attaching warrants (right to buy shares in the future)

**Company Purchase of its own shares**

* To enhance the share price
* As a means of an escape route
* For gearing purposes -> reduce equity and so increase gearing

**Standard elements of a business plan**

* Executive summary
* History and background
* Mission statement and objectives
* Products or services
* Market information – including distribution and promotion methods, types of buyer, demographics, location, occupation, quality required, competitor pricing, comparison of products and services, market characteristics, trends and market research
* Resources employed, management and operations
* Financial information, risks and returns – including past and present revenues and profitability, key elements of the balance sheet and cash flow, contingency plans in relation to risks, amount and timing of finance required, offer to the equity investor including exit route, anticipated gearing, purpose of any finance they are seeking
* Summary action plan containing milestones
* Appendices may then feature past accounts, market research, brochures, technical data, names of accountants, solicitors, bankers etc.

**Balance sheet cash forecasts**

* Estimate figures for all assets, liabilities and equity entries, excluding cash and equivalents -> because it is the cash that we are estimating
* Cash and cash equivalents are then the balancing figure once the other balance sheet estimates have been made
* If there is a surplus of share capital and reserves over net assets, a cash surplus is forecast -> cash deficit if the reverse is true
* There can be problems with this approach as assets and liabilities should be updated to their market value if possible: if for an example a company has a freehold building which is carried in the books at £2mn and the building could be rented out at £200k per year with a 5% return per year to the purchaser. This would therefore be stated at a value of £4mn (200k/5% i.e. a 5% return in perpetuity) not the £2mn in the accounts. If the property is required for the running of the target business though, it cannot be sold and so the market value is meaningless and MV would be overstated by £2mn

**Income statement based approach**

* Profit from operations is adjusted for all items not involving cash such as depreciation
* Figure then needs to be adjusted for changes in working capital to arrive at the operational cash flows

**Balance sheet and income statement operational cash flow**

* Begin with the profit figure
* Then deduct increases in inventory and receivables (assets) and add increases in payables (liabilities). This gives the operational cash flow
* i.e. exactly like you would do for an FAR cash flow question

**Improving cash flow forecasts**

* review actual cash flows against forecasts, learning from past mistakes
* prepare updated rolling forecasts or revised forecasts and adjust these constantly

**Most relevant valuation elements for current owners**

* the NRV is key to current owners as they should not accept any less than this since this is the amount they could get anyway by breaking up the business themselves
* the current owners may also be able to use the discounted cash flows as a bargaining chip to highlight to the purchaser the value that they could be buying over the longer term

**Most relevant valuation elements for prospective purchasers**

* discounted cash flows is important as this is the amount the company will generate
* also need to consider the cost of establishing an alternative new business and if this amount is lower than the discounted cash flows then the lower amount is the maximum that should be offered, provided the purchaser is certain that the new alternative business will be just as good
* i.e. if the cost of establishing a new business of the same type is £2.9mn and the NRV is £3.0mn then there is no point paying more than £2.9mn for the target business when a new alternative business can be established for £2.9mn
* balance sheet value is unlikely to be of interest for either the purchaser or the current owners

**Narrative Chapter 5: Hedging**

**Long and Short positions on futures**

* long position is opened when someone buys futures
* short position is opened when someone sells futures

**Closing Futures Positions**

* anyone may close their futures positions at any time before the settlement date of the contract simply by purchasing an opposing position to lock in a gain or a loss
* futures contracts themselves only settle on the specified quarter dates but there is nothing to restrict traders or investors taking an opposing position at any time and in general most positions in futures are closed out before the settlement date of the contract

**Futures Exchange**

* protects investors in futures against defaults by the counterparty
* guarantees performance of the contracts by taking deposits or ‘margin’ from everyone holding a position in futures and by becoming the legal counterparty to every futures contract

**Different types of options**

* American options can be exercised at any time until expiry date
* This is not the case for European options

**Intrinsic value and Time value of options**

* The actual price of an option is equal to its time value + its intrinsic value
* Intrinsic value -> exercise price is compared with today’s price; i.e. assuming the option expires now, what would the gain/loss be?
* Time value -> this is usually just the balancing figure, with the actual option price and the intrinsic value already found
* Actual option prices are usually higher than the intrinsic value because of the time value or time premium. If there is more time for the option to expire, then there is more chance for the option to move into the money or further into the money
* Time value depends on: the time period to expiry; the volatility of the underlying security price; the general level of interest rates

**Causes of Risk from Interest Rate Movements**

* Fixed rate versus floating -> company could get caught at a high rate than necessary
* Term of loan -> may have to repay, resulting in costs of re-borrowing, especially if at a higher rate of interest
* Term loan -> if taken out, there will be interest costs even if the money is not being used in the business. Is it better therefore to finance via an overdraft?
* Deposit at floating rates – a fall in rates will reduce returns

**Pros and Cons of FRAs**

* Pros -> protect against adverse interest rate movements; they can be tailored as to size and duration, unlike a futures contract which is standardised and therefore the FRA avoids basis risk
* Cons -> usually only available on large loans (above £500k); likely to be difficult to obtain for over a year; they remove upside potential as there is no chance of benefitting from a favourable movement in interest rates as any move in your favour is repaid to the bank

**Transactions undertaken by a borrower in an interest rate futures deal**

* First transaction is to sell futures
* Second transaction is to buy futures to close out the deal
* Borrowers need to protect against rises in interest rates
* Effectively the futures deal eliminates interest rate risk by buying back the futures and if the IR does rise which is what the borrower fears then the futures price will fall and so the gain on the futures will offset the loss on the spot

**Adjustments required for interest rate options**

* The maximum period is 3 months so the number of contracts needs to be adjusted for longer borrowing periods
* An adjustment by 3/12 needs to be made to correct the interest rate from the annual interest rate down to the 3 month rate. I.e. we are correcting the interest rate and not the length of the loan. The 3/12 should ALWAYS be in the calculation as futures are always for 3 months but the premium is always given as an annual percentage

**Direct Quotes and Indirect Quotes on currency hedges**

* Direct quote -> an amount of domestic currency which is equal to one foreign currency unit
* Indirect quote -> an amount of foreign currency which is equal to one foreign currency unit

**Reasons why an importer may not be able to satisfy a forward currency contract**

* The supplier may fail to deliver the goods so the importer does not accept them and will not agree to pay for them
* Supplier needs fewer goods than expected so has less to pay for
* Supplier is late with delivery so currency is not yet needed

**Interest Rate Parity Theory**

* Forward rate should move such that you cannot make money by putting your money in high interest foreign currency accounts
* This is because you will be no better off when converting the money back into your domestic currency than you would be if you left the money on deposit at home
* If the rate of interest in the UK is 3% and the rate in the US is 5% and the spot rate is 1.5:1 then the forward rate is worked out as follows: spot rate x (1 + foreign interest rate)/(1 + UK interest rate) = forward rate
* 1.5 x (1.05/1.03) = 1.529 forward rate

**Purchasing Power Parity**

* Based on the law of one price – a basket of goods in one country will cost the same as in another country once the effect of exchange rates is taken into account
* Based on the same principles as the IRPT above

**Futures vs Forward Contracts comparison**

* Advantages of futures -> transaction costs should be lower. The exact date of receipt or payment does not need to be known or can be varied up to the expiry date at no cost should circumstances change – i.e. futures can be closed out any time before they expire
* Advantages of forward contracts -> cannot be tailored to exact requirements, hedge inefficiencies arise based on the need to deal with a whole number of contracts, only a limited number of currencies can be subjected to futures contracts and the procedure for converting between two currencies which are not the US dollar is more complex for futures than for a forward contract

**Mechanics of a money market hedge of a foreign currency payment**

* The risk is that the foreign currency becomes more expensive in future so we need to buy the foreign currency now to eliminate currency risk
* Process is therefore: borrow in STERLING now; convert the borrowed sterling into the FOREIGN CURRENCY; put that foreign currency on deposit; pay the foreign currency creditor from the deposit account; repay the sterling loan

**Mechanics of a money market hedge of a foreign currency receipt**

* The risk is that the sterling equivalent of the receipt will be lower in future. Therefore we need to sell the foreign currency now so that we can be sure of the sterling receipt
* Process is therefore: borrow in FOREIGN CURRENCY now; convert the borrowed foreign currency into STERLING; put the sterling on deposit; repay the foreign currency loan from the receipt, taking the cash out of the sterling deposit account

**Explanation of a currency option eliminating downside risk and allowing upside participation**

* Imagine a scenario where a UK company wants to hedge a dollar receipt from a US company which appears to be experiencing difficulties and its auditors have issued an adverse opinion
* A forward contract on this receipt would be binding so the UK company needs to sell dollars on the settlement date even if there has been no receipt from the US company, exposing the UK company to currency risk as it will have to buy dollars on the settlement date of the forward contract
* Instead is the company uses an option it can just let the option lapse if the US company does not pay
* Alternatively, if the exchange rate moves favourably then even if the US company does not pay then the UK company can exercise the option and buy the dollars at the strike price and immediately resell them into the market at a better price, thereby making a gain. This would not be available with a forward contract