**Hedging and Risk**

What advice would you give regarding hedging investment?

The company is building a manufacturing plant, and as such will be subject to a number of risks associated with doing business aboard. The company will face foreign exchange risk.

When hedging depends on the nature of the assets it is hedging:

**Real assets** in the foreign country, such as the plant, machinery and real estate **need not be hedged** since they will rise in value along with local assets.

**Financial assets**, such as the cash flow from the operations, if it is being brought back to it’s the mother Co., do **need to be hedged**. There is a risk that cash flows that are due out of foreign Co. may be worth less than expected if the exchange rate weakens against the Domestic Currency. If the company had borrowed to make this investment, there is a danger that the translated cash flows may not be sufficient to service the debt, if the Foreign Currency were to weaken. So the financial assets need to be hedged, to protect their value.

The company can use:

* **Forward Rate Agreements (FRA)**
* **Futures** **contracts**
* **Swaps**
* **Options**.

The first three are similar, but **options** are quite different.

* **FRAs** involve the company setting the price now for delivery at some point in the future of an amount of currency. There is no cash flow to set the contract up, only a cash flow at expiry when the contract will be closed out at the agreed rate. If the currency moves up or down, the company is protected as they have fixed the exchange rate for that date in the future. Any potential gains are sacrificed, but the company is covered against losses.
* **Futures** are similar in that they fix a rate that you are willing to exchange at in the future. With futures, however, there may be intervening cash flows, as the contracts are exchange traded (FRAs are over-the-counter instruments) and a margin may have to be paid in to cover losses.
* **Currency swaps** are like long term forward contracts. These allow the company to effectively lock in long term exchange rates over the life of the project.

Each of these products are contractual obligations, the contracts must be fulfilled.

* **Options** are different; they involve the payment of a premium up front (which is like an insurance payment). They will protect the holder against an adverse movement. If there is an adverse movement in the option, it does not need to be fulfilled and the holder can walk away from the contract. The purchaser of the option contract will only lose as much as they pay for it at inception. This is not the case with futures and FRAs. Options are much more expensive than the first set of products, so it is likely that the company would favors futures, forwards or swaps. If the exchange rate was particularly volatile,

**The advantages** of hedging are that there is certainty over future cash flows. It could be said that by not hedging, the company is actually speculating because the final exchange rate or interest rate is uncertain.

**Bondholders** will be more pleased that the company is hedging, because it makes financial distress less likely.

**Shareholders** would like the company to hedge when it prevents losses, but they prefer the company not to hedge when prices are moving in the company’s favors.

There is also the problem of hedging when the underlying price has been favorable to the **company and rivals** haven’t hedged, which would allow them to reduce prices and put pressure on the company that had hedged.

**Capital Budgeting**

**How are the following treated in cash flow analysis?**

* **Replacement decisions for machines with different lives**
* **Investment inter-relatedness**
* **Company overheads**
* **Creditors**

**Replacement decisions for machines with different lives**: use an equivalent annual cost calculation to compare the cost of machines on a comparable basis.

**Investment interrelatedness**: If investments are independent, they can be considered on their own. If there is interrelatedness, a list of all possible combinations is made, the combinations must be mutually exclusive. The NPV of each combination is calculated and the one with the highest NPV is chosen.

**Company overheads**: Only overheads that are specific to a project can be considered. General company overheads should be ignored for project cash flow analysis. This is an accounting term and is applied on the basis of arbitrary rules that may have little to do with the actual cash flows.

**Creditors**: This will be captured in changes **NWC**. An increase in creditors will mean that working capital is increasing over the period. Creditors on their own will snot appear as a cash flow, only as part of the working capital adjustment.

**In capital budgeting, describe how the following items are treated in the project appraisal:**

**Product cannibalisation** refers to the situation where a company launches a new product or service and that affects the existing range of products and services. This can steal sales away from the existing

offering thus lowering cash flows. This has to be taken into account when estimating the cash flows

when evaluating the project. A cash flow loss would have to be built in to reflect the loss in sales. This would be the case unless the company was involved in a very competitive sector where they would have lost sales whether they introduced a new product or not, as in, for example, the mobile phone market and the personal music player market. If you don’t launch a new product, you will lose sales to the new product from the other company. **Depreciation** is not a cash flow, but it does have an impact. The company will benefit through the depreciation tax shield, so they will pay lower taxes as a result, When the company buys new machinery, the cash is gone at the start. Depreciation recognises this over a longer time frame. Depreciation can be straight line or accelerated. If accelerated, the company benefits because they will receive a greater time value benefit.

**Interest charges** are ignored in the cash flows; they are built into the discount rate that is applied to the project. The after tax cost of debt is used. The interest tax shields are excluded from the analysis.

**How does capital rationing affect a company and how can capital budgeting techniques help resolve the problem?**

Capital rationing can be internal or external. External capital rationing should not exist. This is the capital markets effectively not supplying the company with capital. If the company has identified good projects (positive NPV) to invest in, the market will provide the company with capital, but the company might not like the price the markets are charging for the capital. The market might decide the company is too high a risk and charge a substantial premium for debt or equity capital.

The capital markets may disagree with the figures that the company is producing, thus hiking the price of capital. Internal capital rationing is when the company itself imposes restrictions on the number of projects it will fund. The company will have an annual budget for projects and the different parts of the company will have to bid for the money. The way the company will decide on which projects to invest in will be on the basis of NPV.

The company will use NPV in conjunction with the profitability index (PI) to see which projects will generate the largest total NPV for the company. The PI will indicate to the company which projects produce the greatest return per £ invested, but this will not reflect the scale of the project. The NPV itself will tell which projects together will deliver the largest NPV.

**EBIT Vs Price Earnings Ratio**

**What can the company’s P/E ratio be used for? What are the problems with using this ratio?**

The P/E ratio can be used to compare companies in the **same** industry to try and compare valuations and levels of riskiness and future growth rates. The problems with P/E is that one of its components, the share price, is the result of a huge number of factors, only one of which is the last period’s earnings. Also a company’s P/E ratio is a very complex number in terms of the information that can influence it. It is affected by the pattern of dividends that a company pays, its payout ratio, the riskiness of the company as evidenced by the equity discount rate, and the stream of earnings that the company is expected to generate in the future.

**[Students must look at the problems with P/E]**

**Why might measures based on EBIT or EBITDA be more useful than the price earnings ratio as bases for valuing companies (i.e. market capitalization/ earnings, or total company value/EBIT)? What might be the disadvantages of using EBIT or EBITDA?**

**EBIT** are earnings before interest and taxes,

**EBITDA** are earnings before interest, taxes, depreciation and amortization.

They are used extensively to value companies.

A popular shorthand for valuing companies **P/E ratio** The earnings in the P/E ratio is net income, or after tax earnings. It has had everything taken off. Similar companies in the same sector may have different capital structures, one company may have no debt and another company 50% debt finance.

These two companies will report vastly different net income figures, because of the interest deduction before tax for the geared company. This means that the P/E form of valuation would be inappropriate in this case. The P/E ratio does not adjust for gearing effects.

Valuations using EBIT or EBITDA remove the gearing impact, because the earnings figure used is before the interest is taken off. This means that the companies can be better compared for how they are performing on an operational basis. If the EBITDA measure is used, this takes earnings before the impact of capital expenditure is felt, i.e. before depreciation is subtracted.

But if you are taking earnings back this far to establish values, you have to ask, what is it that creates value for a company? It is investment, it is capital expenditure on good investment projects. So to exclude capex like this would be to fail to recognize the investments that might be needed to create value for companies.

EBIT is useful because it still reflects capex requirements, but removes the impact of gearing.

**Accounting figures vs. finance (NPV)**

Accounting figures are a poor evaluation technique. It uses the accounting numbers, rather than cash flows. The accounting figures are not the same as cash flows. They have non-cash items included (depreciation, overhead apportionment and fixed cost),

P&L include interest payments and exclude changes in net working capital and capital expenditure and. So it gives a misleading picture of the company performance. The measure does not build in risk to the analysis; i.e. there is no time value (we don’t know when the cash is paid out).

NPV corrects these errors, it discounts, and it uses cash flows (in, out and excluding the interest payment effect being captured in the cost of capital). It shows the wealth created for shareholders.

**APV vs. NPV/WACC**

APV has the advantage of highlighting the present value of the financing effects of the project. The aim of the private equity company is to use the debt to take advantage of the interest tax shields to minimize the tax they will pay, turn the company around, increasing profits and to float or sell the company at the end of that period.

APV is designed to accommodate the changing levels of debt and build that into the analysis. To use the WACC/NPV, you would have to recalculate the WACC for each year according to the capital structure.

The WACC/NPV calculation just uses the WACC to discount the cash flows, producing a single figure for the NPV.

The APV will discount the all equity cash flows by an all-equity rate, then it will present value any tax shields or depreciation tax shield, or subsidized borrowing rate, or government grant, using a discount rate that reflects the risk of those cash flows.

APV is very good at isolating the benefit of these financing effects. Managers can see how valuable the project is before any financing decisions are made in other words, it highlights the present value benefit of the borrowing they are doing.

**Agency problems**

Conflicts of interest exist between managers and shareholders, but there also exists agency problems between senior managers and middle managers within a company.

**Agency problems exist between managers and shareholders – Failure by managers to:**

* Act in the best interests of shareholders
* Excessive consumption of company assets
* Failure to maximise shareholder wealth by pursuing non-optimal courses of action.

**With senior and middle managers there can also be agency problems:**

* If the senior managers are assumed to be acting for the shareholders, it may be the actions of the middle managers that are in conflict.
* The middle managers may have their own pet projects that they want to pursue, which may not be wealth maximising.
* Middle managers may select projects that have negative NPVs, or they may window dress figures to get approval.

All of these actions will have a cumulative effect on the performance of the company. A way to overcome these problems is to extend the packages that are offered to senior managers and executives further down the organisation to try and align interests of parties. So options and shares should be granted to middle

managers and long term incentive plans tied into the performance of the middle managers.

**Agency problems associated with too little debt in a company’s balance sheet**

Too little debt in a balance sheet means the company has too much equity. Equity is more forgiving than debt (debt is hard, equity is soft). Managers in the company with little debt will be more able to miss targets and invest in poor projects without punishment. If the company had higher levels of debt, they would have to generate certain levels of cash flow to service the debt before anything could be paid to shareholders. If the company had more debt there would be a value benefit from the tax shield that the shareholders could enjoy. The company with very low or no debt will have a higher credit rating, but they will have a higher cost of capital than they would otherwise have if they increased the amount of debt in the capital structure.

**Agency problems in the process of capital budgeting**

The agency problems here may result in the wrong projects being selected. Managers at different levels in the organisation may have pet projects that they would like to see undertaken. It may result in them having command over a larger part of the business. If the cash flows were too optimistic it would give the project a healthier NPV and make it more attractive. Takeovers are just like large capital budgeting projects. They have a very poor record of wealth creation for bidding shareholders. The managers may also fail to abandon poor projects, instead pouring shareholders cash into a losing situation. NPV analysis would give an indication whether these projects are worth more alive or dead to the company. Proper scrutiny of the estimated cash flows of projects may lead to better project selection and wealth creation for shareholders

**Agency Problems regarding the dividend payment policies.**

The dividend represents cash leaving the company, this is cause concern to:

**Bondholders** they want their interest paid each period and they want their capital repaid at the end of the bond's life, and if the company pays large dividends that will be against the bondholders

interest. They will try to limit this by clauses of dividend payment in the bond contact.

**Shareholders** are concerned, the dividend is part of the return they would expect to receive from the company. They are not guaranteed a dividend since the bondholders come first, if the company decides to make a share purchase instead of dividend payment, it may be for the benefit of the directors who have executive option, which don’t receive dividends.

**Directors** the payment of dividend dose not particularly helps them, whereas the share buyback should push the share price higher. The directors may also decide to pay share dividend rather than a cash dividend, the shareholders do not benefit here.

**Features can a bond have that may help overcome the agency problems that bondholders have with managers and shareholders.**

**Bondholders** will have covenants in the bond contract these can be positive or negative covenants.

**Positive covenants** will be Ex, the maintenance of certain financial ratios, there would have to be a certain level of operating profits divided by interest charges (fixed charge coverage) that would need to be at least met. Failure to do so would put the company in breach of the covenants and trigger action from bondholders. **Negative covenants** would be, Ex restrictions on the amount that can be paid out as dividends or used to repurchase shares, restrictions on the amount and seniority of new debt that can be issued, or restrictions on disposal of assets.

**Put provisions** can be built into the bond contract. This would enable the bondholder to demand repayment of the bond if the bondholders felt that the cash that had been lent to the company was in danger of not being repaid. The put can also be used to capture higher interest rates in the market ( I.e., the company bond coupon is much lower than the current rate of interest, so the bondholder puts the bond back on to the company, and the bondholder can reinvest the proceeds at the higher rate in the market).

If a company is in trouble in the markets and would face high borrowing costs from the debt markets and its shares have fallen sharply, so they don’t want to sell shares, a possible financing route is the **convertible bond**. This is a bond where the holder can convert into shares if the underlying shares rise in value passing a pre-set conversion price. The **convertible bond** helps solve agency problems in that bondholders would not normally lend to the company, but if the prospects are reasonable they could go down the route of a convertible. If the shares don’t recover, they get their coupon and principal back. If the shares recover,

they can convert into equity and capture the upside. Because the convertibility option is attractive, the bonds can be sold with a much lower coupon than would normally be the case. From the equity point of view, the company is selling shares at a premium to the current value (about 50% higher and the sale will be in the future, conversion would not usually happen for a couple of years). The problem for equity is that there will be dilution of their holding when the bondholders convert. On conversion the bond liability disappears – the bondholders give up their bonds for equity.

**Dividend Policies**

**Dividend payment or share buybacks (Repurchase)**

When a company pays a dividend, the share price is reduced by the amount of the dividend. Executive option holders do not get the dividend, only shareholders receive it. So from a manager’s perspective, they don’t get the dividend and the share price goes down. With the share repurchase, the share price doesn’t go down, but shareholders have cash returned to them. With the share repurchase, the number of shares outstanding goes down, so the earnings per share will tend to rise.

So from a **manager’s perspective**, the share repurchase looks a lot more attractive; the share price does not fall as it does after a dividend payment. The share repurchase might even push the share price higher, which would benefit the share options. The other benefit is that it would boost earnings per share and that would raise the manager’s remuneration. A benefit for ordinary shareholders from the share repurchase is that they would be able to defer tax, as they are taxed immediately on the dividend. The share repurchase does not

have the same power as the dividend. A dividend is a commitment to pay out an amount of cash annually.

It is hard to change and it has strong signalling power. The share repurchase on the other hand is more flexible; it can be turned on and off when the company feels like it (after they have won approval from the shareholders in the first place to buy back shares).

**Dividend Irrelevancy**

Modigliani and Miller outlined condition under which dividend policy would become irrelevancy. There would be no taxes, transaction cost, or flotation cost, information would be freely available and investor could borrow or land at the same rate. If a company had positive NPV projects it could invest in and had the choice of paying a dividend to shareholders and then raising new cash from a share sale, or not paying a dividend and using the cash to invest in project, there would be no different to the wealth of the shareholders. It does not matter which rout the company takes. If shareholder wanted a dividend and the company used for investment proposes, the shareholder could create homemade dividend by selling share in

market place. The shares would reflect the positive and NPV projects because of the free flow of information and would be no cost associated with selling.

Leaving other financial decision intact, higher dividend require new more shares to be sold, lower dividends require fewer.

**Passive residual theory of dividends** The Company would invest in all positive NPV projects, and pay out any earnings that were left as dividends – dividends would be unpredictable

**Clientele effect** The Company will attract particular types of shareholders due to their dividend preferences. Companies establish a track record for paying Dividends, shareholders recognise this. Companies should not try to change div policy to attract new clientele.

**Signalling effects** There is a problem with asymmetric information, managers can use the div to give indication about future performance of company.

**‘bird-in-the-hand’** view said that near dividends were less risky than distant pay-outs; a certain payment now is more valuable than an uncertain gain in the future. But discount rate values all div at the same risk adjusted rate.

**Do Flotation costs favour high dividends or low dividends?**

If flotation costs (fees for selling new equity, and the discount at which new shares might have to be sold at) are high, companies will not want to be raising cash by this method unless they can help it. That would mean they would pay low Dividends, and they would retain earnings for investment in the business.

**Evaluation Projects**

If the project was successful and another company was interested in buying it, they would best value it using a **discounted cash flow valuation**. They would forecast cash flows going into the future and a growth rate of those cash flows. They would then use the dividend growth model (DGM), but instead of dividends being discounted, it would be cash flows.

A discounted cash flow valuation is better than using an earnings multiple valuation. It uses cash flows rather than accounting figures, but the DCF valuation can be manipulated as well. By altering the growth rate of cash flows, or discount rate,

Earnings figure valuations depend on different companies using the same accounting conventions. (do not give a true picture of the cash flow position of the firm).

**Methods by which foreign projects can be evaluated:**

**Method 1** take the foreign cash flows as given, work out a foreign discount rate, discount the cash flows by that, calculate NPV, convert NPV to £ (domestic currency) at the current spot rate, this is the best method since we do not need to forecast the future rate that have certain fluctuations.

**Method 2** take the current spot rate and the interest rates that exist between the 2 countries and work out the forward exchange rates for each year. Convert the foreign cash flows into domestic cash flows using the forward rates, discount the £ cash flows with the £ (domestic) cost of capital. Calculate the NPV.

in **mutually exclusive projects**, we have to choose among competing projects, but it would be wrong to rank the projects on the basis of their IRRs. This is because the IRR does not reflect the scale of the project. Also the IRR may be higher for one project than another, but when analysed using the company **cost of capital** the results are the other way round. This is due to the pattern of the cash flows over the life of the project. incremental cash flow analysis of the two projects should be used. This is the defender and challenger analysis. The project with the highest nominal cash flow is the defender and the other is the challenger. Subtract the challenger cash flows from the defender and find the IRR of the remaining cash flows. If the IRR is greater than the hurdle rate, keep the defender. If not, keep the challenger. This will choose the project that will deliver the greatest NPV.

**Real Options**

Real options are options to **alter**, **abandon**, or **extend** a project’s cash flows at some future point. Because of the nature of real options, conventional capital budgeting is not appropriate for their evaluation.

Companies sometimes undertake projects that appear to have negative NPVs. The project is often undertaken because the company sees a future opportunity to **expand** the project which would make it much more valuable. So the company is willing to put up with early losses until the point in time comes when they have the option to expand the business, like early investments in the internet and a new drug

These were loss making for parent companies but allowed the company to have a presence in that market which made it easier to expand when that market had grown sufficiently. To have not invested would have meant the company would have to do an awful lot of catching up.

-The **exercise price** will be the investment required at some point in the future.

-The **stock price** is the present value of the follow on investment’s cash flows at the point of investment.

-This requires you to estimate the possible size of the market for a product that does not exist yet at some point in the future (standard deviation).

-The **time to expiry** is the time until the company no longer has an exclusive option.

There is also the option to **abandon** a project. These are effectively **put options**. You would reevaluate the project at different time points and if alternative strategies have more value, they would be adopted, e.g. selling the project, or switching the project. The abandonment (and switching) option gives the company more flexibility.

Another real option is the timing option. This gives the holder of the option the option to wait a period of time before taking up the investment. It may be an option on an oil field and you wait to see what happens to oil prices. It may be a development plot of land when you wait and see what happens to residential prices and commercial prices before you exercise the option. The NPV of the conventional project would be calculated, then the value of the real option(s) would be calculated using the binomial or Black–Scholes option pricing model. The values for the options would then be added to the basic NPV of the project to give a true indication of the NPV of the project.

The project could be liquidated at various points during its life. The **liquidation** value would be the **exercise price** (X) and the **present value** of the project would be the **asset value** (S0). **If X is greater than S0, then the project should be liquidated**. By shutting down the project, The amount saved represents the gain from exercising the abandonment option.

The discounted cash flow (DCF) analysis is rigid. It cannot adapt to managers changing their minds as the business environment evolves. A company will have options to make strategic changes. to abandon, delay, or expand the project, to alter the levels of production, or to suspend a project. These options are ignored in traditional discounted cash flow analysis. DCF will produce a figure for the NPV; if that is negative the project will usually be rejected. However, that project may contain one or more of these real options. In doing a real options analysis it allows you to reject the unfavourable course of action and avoid the losses that are associated with that action. So a real options analysis can uncover extra value in a project and maybe make a negative NPV project into a worthwhile project.

Book values or market values? Indicate which one is used in calculating the WACC and why

Market values are used for calculating the WACC. The market values reflect the market’s estimation of the earning ability of the company and its assets in the future, which will reflect the time period for the project. Book values are historic; they do not reflect the potential of the company’s investments. Book values may be used by debt suppliers in evaluating the company’s capital structure decision; the book value is not as volatile as the market value.