4.4.1 Risk Responses

Unit: Unit 1 – Treasury Strategy

Module: Module 4 – Financial risks

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Summary: Risk response starts with understanding investor expectations. There are some standard responses, of which risk transfer, or hedging, is of particular importance to treasurers. There are costs and risks to hedging, no hedge last forever

Keywords: risk avoidance, risk retention, risk increase, risk reduction, risk transfer, hedging, insurance, derivatives, asset beta, rewarded risk, unrewarded risk, risk appetite, risk budgeting, risk response, key performance indicator, opportunity cost, speculation, basis risk, counterparty risk, operational risk

Contents

1 Introduction 1
2 Investor background 2
3 Risk appetite and budgeting 4
4 Risk response 5
4.1 Avoid the risk 7
4.2 Accept the risk, and retain it or increase it 8
4.3 Accept the risk and reduce it 8
4.4 Accept the risk and transfer it 9
4.5 Risk transfer and risk transformation 10
5 Mechanism of response, KRIs, KPIs, KCIs, delegation, feedback 10
6 Risk transfer (hedging and insurance) 11
6.1 Hedging and insurance 11
6.2 Hedging and corporate finance 12
6.3 Applications 12
6.4 Transaction cost of hedging 13
6.5 Opportunity cost, speculation and other risks of hedging 13
6.6 Hedging and the business model 15
6.7 Hedging and the risk framework 15
6.8 Internal and external hedging 16

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Learning outcomes:

1. Choices available for risk management include:
   a) avoid
   b) accept and retain or increase
   c) accept and reduce
   d) accept and transfer
2. Investor appetite is the starting point for risk management.
3. Business v financial risk is a key dimension for risk management.
4. Generally lower risk means a lower cost of capital.
5. Sector behaviour may also influence risk management.
6. Risk budgeting is one approach to risk management.
7. A probability impact diagram can be sued as a guide to risk response, but it does have limitations, as indeed do all measurement techniques.
8. The disciplines of management need to be applied to risk management, with documentation, responsibilities, benchmarking, measurement, reporting, improvement, etc, all requiring attention.
9. Hedging is important for treasurers to fully understand.
10. Hedging carries costs, including transaction costs and opportunity costs.
11. Hedging carries risk including basis risk, credit usage, counterparty risk, operational risk and high skill requirements.
12. Hedging has a time limit.

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1 Introduction

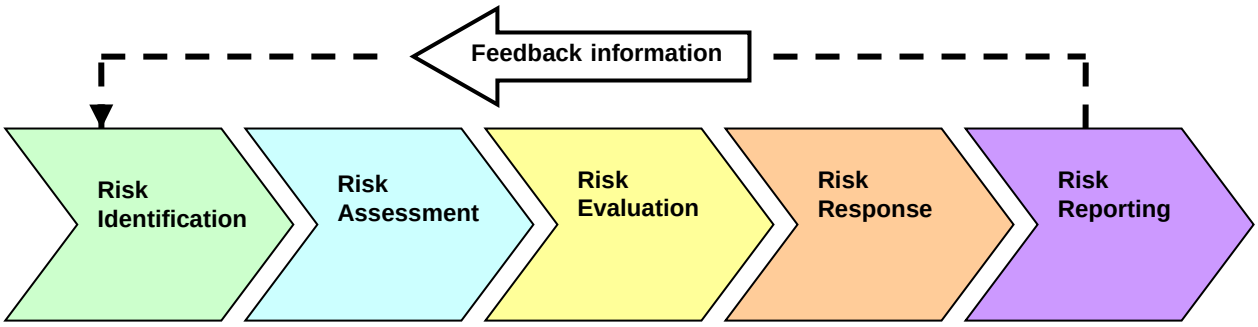
Following evaluation, the next step in the risk management process (Exhibit 1) is the all-important decision regarding what the response to each risk should be. And such a response has to be taken in the light of what risks investors want the firm to take.

So before we concentrate on the 'classic' financial risks of:

- currency risk
- interest rate risk
- commodity risk
- pensions risk

We must consider business risk and the aspects of corporate finance.

Exhibit 1: A risk management framework



There are four core responses to any risk, namely:

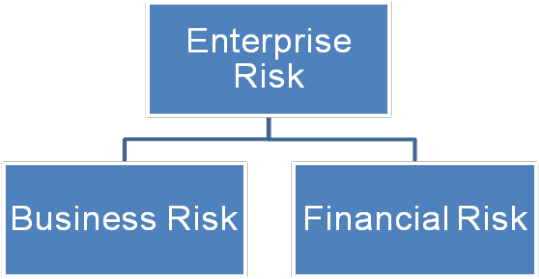
- **Avoid** where appropriate those risks which the firm is not expected to take.
- **Accept** all other risks (by definition), and:
    - **Retain** those risks which are core competencies of the business and which the firm is expected to take. *In some cases this will require risk to be increased*.
    - **Reduce** those risks which the firm is expected to take action to reduce by diversification, suitable controls, or by business tactics.
    - **Transfer** those risks which the firm is expected to take action to reduce by transferring them to a third party via insurance, derivatives, or the use of subcontractors.

All of these responses, with the possible exception of avoidance, require the firm to 'manage' the risk.

2 Investor background

We have to start thinking about responses to risk in terms of the investor. The purpose of the firm is to increase shareholder value so all decisions on risk management have to be built from that. This leads us to realise that there has to be a certain level of risk in the business to achieve the equity type returns required by investors. Let's return to the business risk / financial risk dimension.

Exhibit 2: Risk classification



Corporate finance theory teaches us important lessons about the mix of business and financial risk. The required return must come from a mixture of both and the Hamada formula (for un-gearing and re-gearing betas for different levels of gearing) tells us that the business risk has an un-geared beta (asset beta), which can be raised through a geared beta as financial risk rises[1]. We often assume a business has a fixed asset beta but firms can choose to make their assets more risky and therefore one response to risk is to increase risk. This increase can also apply to the leverage element of financial risk, or indeed other types of financial risk.

With a given level of enterprise risk, we now move on to consider the four financial risks under consideration here:

- currency risk
- interest rate risk
- commodity risk
- pensions risk

We must ask whether an increase in these risks would raise the return to investors, or whether investor returns would be improved by a reduction; or in fact investors may not understand these risks.

[1] Note that some businesses in volatile sectors derisk themselves by holding cash.

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Example 1: Commodity risk
Flycheap SA and LoCostAir SAS compete in the no frills airline sector. Flycheap has a policy of hedging fuel cost up to one year in advance whereas LoCostAir does no hedging whatsoever. It is not clear which of the two polices will be more successful. If fuel costs rise, Flycheap will have an advantage for up to a year. If fuel costs fall, then LoCostAir will gain the advantage and probably have the flexibility to lower prices.

Investors do not know which of the two policies is the more risky and whether that risk will actually lead to higher returns. Accordingly investors do not favour one airline over the other in their stock selection. Taking fuel cost risk is not rewarded.

Example 2: Commodity risk continued
Flycheap SA realises that detailed knowledge of the AVTUR / Jet Fuel market is needed in order to hedge fuel cost effectively. Flycheap therefore decides to capitalise on this knowledge (and its inside track on the airline industry) by *trading* AVTUR. Investors now have a real choice for obtaining appropriately risk-weighted returns: They can invest in LoCostAir which simply flies aircraft, or they can invest in Flycheap which both flies aircraft and trades AVTUR.

Examples 1 and 2 consider a situation where a financial risk (i.e. a commodity or fuel price risk) was also a business risk and it was not clear whether the risk was likely to lead to higher expected returns. Flycheap has taken a crossover risk and sought to add shareholder value by taking risk by trading AVTUR / jet Fuel.

Similar approaches can apply to pure financial risks.

Example 3: Interest rate risk
Blue Cow GmbH is a leveraged buyout of assets from a multinational. It has high interest rate risk because of the high leverage and its lenders insist on a programme of interest rate hedging to lower this risk. Investors want to capture the benefit of higher returns from Blue Cow's commercial activities (i.e. its business risks), but not be at risk from interest rate changes – either rises or falls. There is no expected reward from the high interest rate risk and so lowering this risk lowers the cost of capital for Blue Cow.

Other examples of unrewarded risk are the operational risks such as theft, fire and fraud. However the line between rewarded / unrewarded can be a little blurred.

Example 4: Pensions risk
Swell Well plc is a large oil explorer with a defined benefit pension scheme. In the assets of the scheme are a large proportion of equities. The return on these equities can be expected to be correlated with the return on the assets for Swell Well. Accordingly an investment in Swell Well actually provides a geared return on the equity market, as when shares rise, the chance of a pension surplus / reduced deficit also rises. This is also a rewarded risk in that the equities in the scheme are expected to produce equity type returns. Accordingly the required return for Swell Well should be higher than for an identical company with a different pension investment policy.

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Therefore investors may prefer investing in Swell Well for this reason and would not wish for the pension investment policy to be changed.
Equally some investors might think that the business risk sought by investing in Swell Well (i.e. oil exploration) is overshadowed by the pension risk.

Similar arguments can apply to the other financial risks. Corporate finance rescues our thought processes at this stage and says that a lower risk reduces the cost of capital (by allowing cheaper equity and debt capital) so raising the value of the firm. So while individual examples to counter or confuse this might be found, we can generally assume that reduced financial risk will lower the cost of capital. The treasurer's role is therefore relatively clear - financial risk should be reduced.

We should also bring in other dimensions here.

Usually one company in a sector cannot go too far away from its peer group in response to risks, or else it may be shunned by investors who will not understand its approach.

Investors may not measure firms according to variables around financial risk. For example, many analysts will assess the operating performance of a firm but not consider the interest charge at all. They will assume that the firm is negotiating well on interest costs with its lenders and that there is not much scope for performance enhancement from the interest line. But investors do not expect their firms to become insolvent through interest rate risk and take a dim view of episodes of extreme financial mismanagement such as frauds at UBS, SocGen, Barings, etc.

Therefore financial risk has a dimension of solvency about it and again, the message seems to be (perhaps with exceptions, notably around leverage) that the lower the financial risk, the better. However, from an Enterprise Risk Management point of view, we can also look at overall risk and perhaps not always seek to reduce financial risk. Perhaps in a small way, a budget might allow some small risk taking.

3 Risk appetite and budgeting

The theory of enterprise risk management puts all risk together and should emerge with an overall approach to risk tolerance, risk appetite and risk budgeting. Evaluation should, in theory, be able to put all risks in to the hat and then, with a given level of risk appetite, chosen by management and supported by investors, arrive at a risk budget. The risk budget could then operate like a spending budget, so that each budget holder of a particular risk knows exactly how much risk to take for any one risk.

Example 5: Risk budgeting
Asimov Inc operates in the capital goods sector and regularly makes tenders in foreign markets. The tenders are based on foreign exchange rates prevailing at the time of bid but there is risk in the tenders which is difficult to hedge because there is uncertainty over whether the tenders will be accepted.

The *key risk indicators* for this risk measure the following:

- number of bids outstanding
- size of exposure in bids outstanding
- length of tender
- volatility of currency pairs involved in tender

to produce an overall measure of risk for tenders. The risk in tenders is then given a budget for overall risk, which is managed by the tendering team and their treasury colleagues.

Asimov converts this budget to a *key control indicator* adding up

- maximum exposure to any one currency pair, adjusted for volatility (and hence time)

to meet the budget requirements.

The challenge here, of course, is how to get risks meaningfully into one common measure and how to think about dealing with budgets and what they mean in operational terms. Correlation between risks also needs to be accommodated.

4 Risk response

What alternatives are there to deal with risk or to meet the requirements of a risk budget? Not all firms will budget risk, in fact few do, and so we need some ideas as to how to tackle risks.

Where a financial risk is evaluated with a two dimensional measure and can be placed on the risk map, the latter might be used as the initial or default determinant of what the response should be. It can provide a framework within which discussion can take place at the appropriate level. The risk map gives a format for defining the risk tolerance and appetite of a business in general, strategic terms. A few well understood risks might be referenced as benchmarks within the grid against which the many other risks can be plotted. Risk tolerance and appetite could be defined by allocating areas on the map to a particular response. For example, in Exhibit 3, it might be decided that all risks in the right and uppermost three squares must be avoided or reduced in some way to reduce their probability or impact.

Exhibit 3: Bands of risk giving guidance on risk response

Severity of Consequence	Likelihood of Frequency: Remote	Low	Medium	High	Probable
Extreme		Risk 2			
High					Risk 1
Medium			Risk 3	Risk 4	Risk 5
Low	Risk 6				
Negligible			Risk 7		

In the exhibit, this firm could establish a default response for a risk depending on where it falls in the risk map. An alternative approach would be to use the risk map simply to allocate priorities, with a totally flexible approach as to response in each case.

The risk map also allows the risk to be broken down into probability and impact, guiding a response into one or both factor. Example 6 reprises an earlier example.

Example 6: Probability and impact

Yummy Foods Inc manufactures food products for Piggy Inc, a major retailing chain and is heavily exposed to their credit risk, as goods shipped to Piggy Inc are not paid for until 90 days after delivery. Piggy Inc contributes most of the turnover of Yummy Foods. The average size of the receivable is USD 50 million, and the probability of failure is assessed at 1 in 100 over a time scale of one year. If Piggy were to fail, then Yummy Foods would suffer heavy losses: the impact would be a cash loss of probably the whole of the receivable of USD 50 million, an extremely large sum for Yummy Foods, who typically run on small margins. Yummy Foods cannot influence the probability of Piggy failing, but must reduce the risk because of the potential impact and so decides to sell 80% of each receivable when invoiced to a factoring firm. The factoring firm takes the risk into its portfolio and so is cost effective for both the factor and Yummy Foods Inc. This concept is similar to the use of insurance.

Other factors influencing how a firm describes “impact” on the risk map, and where it sets the boundaries for action, include:

- The established risk culture of the firm.
- The risks it believes investors are expecting it to take, or to take action to reduce their impact.
- Whether risk exposures to be managed are part of the core business, are correlated with it, or are incidental to it.
- The current financial health of the organisation and of its operating cashflows.
- Whether financial ratios need to be managed in order to maintain a credit rating.

- Whether loan covenants require hedging (either explicitly through terms in borrowing agreements or implicitly in order to meet covenants).
- The nature of the firm's competitive circumstances.

It is not intended to be a complete list because it never could be; each Board will make its own judgment in its own way in order to enhance their perceived strengths and defend the areas where they perceive a weakness.

Where a risk is evaluated with a one dimensional measure, the natural response is to create a risk budget and allocate a maximum risk to each risk so measured. Thus a firm with a defined benefit pension scheme and, say, a portfolio of foreign currency debt may establish a VaR measure on each of these on a similar basis and timescale and have a risk response that each should be below a certain number.

The primary risk response is whether to avoid or accept the risk. Once the decision to accept a risk is made, then a decision must be made on how to manage it. Following evaluation, the next stage in the risk framework is to design a response. Hopefully the evaluation should allow some guidance in this. Understanding the evaluation should allow a better understanding of how the risk might react to different responses. A one dimensional measure of risk should allow a risk budgeting or risk minimisation approach. A two dimensional measure of risk should allow a view as to whether to tackle the probability or the impact or both of any one risk.

Risk responses can be categorised into four classes.

Exhibit 4: Generic choices of response to risk

Avoid	
Accept and	• retain or increase • reduce • transfer

4.1 Avoid the risk

Avoid the risk by choosing not to take that risk. This will usually mean not undertaking business that generates that risk. This approach is of course only possible if the risk is not core to the strategy of the business.

There may be risks which cannot be transferred efficiently. This may be due to lack of resource or expertise (for management) or because the risk is not transferable because no one can be found to take the risk on at a price that the company can afford. Such risks have to be avoided, typically by changing the business model (e.g. by moving out of a particular sector) or reduced by enhancing internal control to minimise the chance of them arising.

Example 7: Avoiding risk through adapting the business model

TyreCo SA designs and manufactures automotive tyres, which it sells globally. Tyres need to comply with quality regulations (e.g. for vehicle tyres) in the marketplace. In the USA, one of TyreCo's competitors is found liable as a party to a class action. Tyre failure in a particular make of vehicle was held to be responsible for the deaths of a number of vehicle

users. As a result of this ruling, the risk is that the dependants of anyone who is killed in a vehicle fitted with these tyres (i.e. who can show they are a member of the class) are automatically entitled to damages – irrespective of the condition of the tyres, their fitment, the condition of the vehicle and so on. The cost of such damages is significant, and at a level which would materially damage TyreCo's ability to continue in business should it be subject to a similar action.

Such a risk would be prohibitively expensive to insure against, i.e. to transfer. Tyreco could avoid this risk by adapting its business model; perhaps by not selling to the USA at all, or by only supplying particular markets perceived to be of lower risk, e.g. agricultural vehicles or recreational vehicles such as golf carts.

4.2 Accept the risk, and retain it or increase it

Such risks would normally be associated with the core business of the firm (i.e. with its core competencies), and are usually those the firm is expected to take by investors. A mining company is generally assumed to be at least a partial play on the price of the commodity it is mining, and most of, if not all such risk may be retained within the firm. A car company takes risk by designing new models, and the more innovative they are, the more risky they are. Risks can also be increased, to increase return. New countries for marketing, price leadership, new machinery, the list goes on, are all ways that risk can be increased. In many products, risk reduces as the product becomes more aged and so the firm must make efforts to restore risk to a level that will produce the required returns.

Example 8: Increasing risk

Marmite is a very mature product with stable sales, costs and margins. The commoditised nature of the product and lack of growth is priced into the enterprise evaluation. To seek growth, new products are required, i.e. risk must be increased.

Note that Marmite is actually owned by Unilever where Marmite is part of a portfolio. However, even such an owner will increase risk to increase return.

The deliberate seeking of financial risk might also be included here. Private equity firms, for example, deliberately increase financial risk to increase return, even though it is not a business risk to the firm.

4.3 Accept the risk and reduce it

Risk reduction generally refers to internal systems and controls, and is an appropriate response to risks which investors expect the firm to take action to reduce. Reduction can be achieved by diversification, by suitable controls, or by business tactics. Again, risks that are accepted and reduced are more likely to be those in which the firm has some special competence and which are therefore core to the business model. The mining company may reduce its exposure to the downside risk of commodity pricing by choosing when to extract the commodity, and when to leave it in the ground. It may seek to diversify across a number of commodities, utilising its expertise as a miner to achieve benefits not open to investors.

Example 9: Selecting a response to risk

Englebert Ltd manufactures and supplies exhaust assemblies to OEM Motor Co. Exhausts are supplied direct to the production line on a "just in time" basis. Exhausts must be perfect when they arrive at OEM's plant – in particular they must fit the vehicle they are designed for. There are heavy penalties for substandard assemblies, and in particular if the production line has to be stopped to rectify faults.

Exhausts include two nearly identical pipes A and B welded to a silencer box, using a jig to position the pieces during the welding process. The exhaust will not fit the vehicle unless one each of pipe A and pipe B is fitted the correct way round. There is therefore the risk that the pipes are wrongly fitted; if they are, Englebert could suffer heavy contractual penalties for just one wrong exhaust.

Englebert cannot avoid this risk – it is core to the business. The risk cannot simply be accepted and retained – the costs of even a low frequency of faults are unacceptably high. Englebert is unable to transfer this risk – it is not insurable.

Englebert chooses to reduce the risk by designing the silencer box and each pipe in such a way as to ensure that:

- the silencer box and the two pipes can only be fitted into the jig in the correct way
- that one each of pipes A and B have to be used
- and in the correct orientation

By this internal control[2], Englebert reduces (nearly to zero) the risk that pipes are fitted to the silencer box incorrectly.

4.4 Accept the risk and transfer it

Risk transfer is also an appropriate response to risks which investors expect the firm to take action to reduce, or are unrewarded risks, but in this case risks are reduced by transferring them to a third party. Transfer could be via insurance, or derivatives, or the use of subcontractors. Notice that this is not the same as avoiding the risk, since it is unlikely the transfer will be entirely risk free. A subcontractor failure will leave the firm re-exposed to the original risk; a derivative comes with counterparty risk and potential hedge inefficiency. Of course financial risks are often assigned to this treatment.

Example 10: Selecting a response to risk

Englebert Ltd manufactures and supplies exhaust assemblies to OEM Motor Co. OEM Motor Co is situated in a different continent to Englebert and the exhaust assemblies are priced in US Dollars, whereas the majority of costs for Englebert Ltd are in Euro.

The price for the assemblies is established each December for the following calendar year. At that stage negotiations for margin and cost are made, making assumptions about many things, including exchange rates. OEM Motor Co. gives a forecast for demand for the assemblies with likely variation and pricing bands for volume are agreed.

[2] This is an example of "poka yoke" – a Japanese term which means mistake proofing. A poka yoke device is one that prevents incorrect parts from being made or assembled, or easily identifies a flaw or error.

Immediately following this negotiation, i.e. to be very near to the exchange rates assumed in negotiations, Englebert enters into forward foreign exchange contracts, selling US Dollars for Euro for the relevant dates for 80% of the forecast sales for the whole calendar year.

As the year advances, forecasts of volume are repeated and the hedge percentage gradually increased to nearly 100% as the year end (and the next negotiation) approaches.

Englebert followed this 'accept and transfer' policy on a risk budgeted basis, so that risk arising from the combination of sales volume and exchange rate uncertainty does not exceed a certain measure, as calculated by Value at Risk methodology.

4.5 Risk transfer and risk transformation

There is a common fallacy that risks can somehow be transferred completely, thus eliminating risk. In fact risk transfer is really risk transformation. When a company enters into a forward FX deal, it transforms FX risk into counterparty risk on the bank, together with an increased commercial (opportunity) risk that the business will be disadvantaged at the hedged rate. So risk transfer is much about transforming risks which investors don't want into risks that they find more acceptable.

5 Mechanism of response, KRIs, KPIs, KCIs, delegation, feedback

The choice of response to a risk has to be followed through in the normal disciplines of management. Thus the following have to be implemented:

Exhibit 5: Management discipline for risk management

Issue	**Comment**	**Example** (from Asimov Inc)
Written policy for response	*The response and its implementation should be recorded*	
Responsibility for response	*A person needs to be given ultimate responsibility for the management of this risk*	Group Treasurer
Measure of risk adopted (KRIs)	*This should ideally accord with the firm's overall measures*	Value at Risk from bids outstanding, covering number of bids outstanding, exposure in bids, length of tender, FX volatility
Benchmarking	*Comparison to sector or other appropriate comparator*	Annual review of competitors, seen in their participation in bids
Decision making	*A framework for decision making by managers and staff is required*	Monthly meetings with room given to make bids in following month

Issue	**Comment**	**Example** (from Asimov Inc)
Level of risk allowed (KPI / KCI)	*This should relate to the actual risk and be framed in its language*	KPI is Value at Risk, with KCI set as max exposure to any one currency pair
Reporting/Feedback	*How should performance against the policy KPI / KCI (s) be reported / fed back.*	Report from monthly meeting to management
Improvement	*Procedures to ensure that policy is kept up to date, adhered to, and has the desired effect*	Annual review with CFO

6 Risk transfer (hedging and insurance)

It is worth spending some time on risk transfer, of which there are two general sorts, hedging and insurance; although often there is confusion between the two and hedging can be argued to be a form of insurance.

6.1 Hedging and insurance

When firms decide to hedge, they are insuring themselves against a negative event. This doesn't prevent a negative event from happening, but if it does happen and the firm is properly hedged, the impact of the event is reduced. So, hedging occurs almost everywhere, and we see it every day. For example, if you buy house insurance, you are hedging yourself against fires, or break-ins. If you buy a month's supply of coffee because it's on offer, you are hedging against the price going up this month and against running out of coffee if a group of friends calls round unexpectedly.

There is, of course a fundamental difference between the two examples. An insurance policy against fire has little upside, and indeed the fire may happen whether you are hedged or not and will still cause some distress. With regard to the coffee, the price may in fact go down, thus making the hedge a mistake, possibly. An upside in the coffee price is foregone with hedging.

Hedging usually falls in the lap of the treasurer, whereas insurance often falls into the lap of a risk manager, or insurance manager. There are similarities in approach to this, however. Both address the issue of downside and a frequent approach to insurance is to consider how much risk can be retained, in the form of an excess, or deductible.

Example 11: Cost / benefit

A vehicle fleet has estimated accident damage costs at $50,000 per year (damage ranging from minor scrapes to vehicles written off) and the firm is considering transferring the risk by taking out insurance. However, it makes no sense to insure against the accident damage if the insurance premium is more than $50,000 per year. In such a case, insurance might be cost-effective if it only covered really expensive repairs or for vehicle write-offs.

Note, however, that insurance may be required by local laws and in fact this firm should manage this risk through careful consideration of the size of the deductible (or excess) on its insurance.

6.2 Hedging and corporate finance

Although hedging is generally agreed to be a natural activity for individuals acting for themselves, some commentators have challenged the validity of firms managing their risks in the interests of their shareholders. For instance:

- Hedging does not automatically increase shareholder value – it should be left to the shareholders to arrange their own action.

It may be that investors value precisely those risks that the manager is trying to smooth away. However, in general the more volatile a firm's performance the higher return is required – and the lower the share price.

- The hedging process may not be successful, for one or more reasons.

Some firms have felt compelled to take action when circumstances have already moved against them and they are concerned that the situation may worsen further. The worst case is that inappropriate action is then taken, which does more harm than good.

- External hedging is a zero-sum game.

In theory, the price paid for an external hedging solution is the same as the present value of the expected outcome. On average and in the long run, there is therefore no point in reallocating (transferring) risk as the long term payoff is unaffected. However, although risks may well even out in the long run, if a risk destroys a firm in the short term it won't be around to benefit from any eventual opportunity.

6.3 Applications

The classic description of hedging is that an instrument is acquired or contracted where the price of that instrument or contract moves exactly inversely to the exposure which has given rise to risk.

Thus a EUR currency based business with a USD obligation in three months time will have an exposure to USD which gives rise to risk. The risk is that the USD will be more expensive in three months time than now. The EUR based business can contract with a bank to buy the USD forward, or it can buy a future on an exchange (this is not a popular approach with most corporates). The forward will meet the obligation at a price known today. The future will move in price exactly opposite to the exchange rate so that on the day of payment, the gain or loss on actual payment equals the loss or gain on the future.

Of course, an arrangement could be struck with the USD supplier in this case so that it is paid in EUR. It is worth considering what exactly has changed from one arrangement to the other.

A business with floating interest rates can enter in an interest rate swap so that the floating rates paid are matched with floating rates received, whatever rates they move to, leaving the business with a fixed rate.

Note that although we have used language such as exposure and risk, they are different and the treasurer must distinguish between the two. Exposure to EUR/USD may be more risky than exposure to EUR/DKK, for example.

Slightly more complicated is exposure to a continuous stream of payments. Suppose a company based in the UK (and with almost all sterling costs) sells retail goods to Europe. It hopes that the exports will continue for a long period. Choosing the period of how far to hedge ahead is a challenge for management. One approach used here is often to hedge when the rate is seen as good value, but treasurers must be careful to know that they understand what this means.

6.4 Transaction cost of hedging

As with insurance, where an insurance company must make a return for accepting the transfer of risk to it, so whenever a company undertakes hedging, the counterparty in a derivative contract must also make a return for accepting the risk.

In the case of derivatives, this is typically seen as the bid / offer spread and so the cost will vary according to the depth of the particular market and the number of competitors in that market. Foreign exchange trading is very deep and rarely has issues with illiquidity, but forthcoming regulation will impose extra costs on this market which treasurers have always assumed to be low cost.

For some instruments, where the market is not deep, the cost will rise accordingly.

6.5 Opportunity cost, speculation and other risks of hedging

Using a risk transfer approach (i.e. hedging) with financial risk, where the underlying risk is reflected in a market price, leads to the possibility that the market might have moved favourably, leading to an opportunity cost, i.e. a risk of hedging. It is always tempting for assessors of any hedging policy to look at how the hedge on its own has behaved and use this as a judge of how treasury has performed. This is always a mistake, as in theory on 50% of occasions; there will be an opportunity loss. If, however, hedges are chosen on the basis of the underlying rate being ‘good value’, then that might be more appropriate.

There is therefore, a fine line between hedging and speculation.

Example 12: Hedging or speculation

Humperdinck Ltd manufactures cleaning products for the retail market, where a significant part is in the Euro zone. The price of goods supplied to retailers is based on competition with Euro zone based competitors and so Humperdinck has a EUR/GBP exposure essentially extending forever.

At one stage the exchange rate is 1.25, much more favourable than the range of 1.30 to 1.40 where it had previously been. On this basis, Humperdinck extends its normal hedge

from a period of 6 months to 18 months. This is justified on the basis that exports are expected over the period.

This could also be viewed as speculation, in that the hedge period has arguably become excessive.

The exchange rate falls to 1.10, even more favourable to Humperdinck, but causing an opportunity loss.

The decision to extend the hedge turned out to be 'wrong' and although it could be considered hedging, it was clearly based on the opinion that 1.25 was a 'good' rate. This was closer to speculation than hedging.

What was missing in this analysis was to consider the overall risk, and to work out what was actually important to Humperdinck. Greed seems to have overtaken rational thought.

Speculation is undertaken in some companies. There is nothing inherently wrong with speculation by specialist trading firms. Indeed this is one of the ways in which currency and other traders make their money, and speculation with derivatives is now an important component of most developed financial markets.

Speculation by non-specialist corporate treasuries is often prohibited by their internal policies. However, some corporates do actively trade items such as foreign exchange or commodities which are closely associated with their core business. For example electricity companies may trade electricity in addition to generating and supplying it. Such trading activity is firstly actively acknowledged by the firm in its relations with its investors, and secondly is generally carried out by a specialist department outside of the core treasury function. For instance National Grid plc undertakes limited interest rate speculation, and also trades electricity itself. It can be argued that each activity brings the company closer to the markets in which it transacts and therefore increases education; and is also a natural extension of financial markets activity which are going on anyway.

There are other very standard risks, or downsides, of hedging:

- basis risk
- credit usage
- counterparty risk
- operational risk, including fraud and complexity
- skill set issues

Basis risk refers to the fact that a contract or derivative will not track exactly with the underlying risk. For example, hedging fuel risk raises the issue that there are many different types of fuel, from diesel to jet fuel but not often a contract that tracks them exactly. There is also a lack of contracts in some metals and other commodities and in futures markets, where commodities mostly trade, and in futures markets, contracts are for fixed sizes and delivery dates.

Credit usage revolves around the requirement for a credit line with (usually) a bank to allow derivative trading. Debt capacity is therefore needed and, as with all other credit facilities from banks, will become more expensive. If derivatives are collateralised in line with mark to market movements, then there will be cash flow uncertainty again, possibly also leading to a need for debt capacity.

Counterparty risk refers to the issue that the bank with whom a derivative is traded might fail, leading to possible loss of collateral or loss of a mark to market gain and loss of the hedge.

Operational risk is fairly self explanatory, as treasuries get more complex and more trading is done, there is a greater chance of things going wrong and skill set risk is all about the heavy demands on people to manage all the hedging, thus requiring very skilled staff.

6.6 Hedging and the business model

It is very tempting to see hedging as something special in business. It is a specialised area needing a special skill set and it has a special place in the accountancy world, but it is actually all about cost or income. If a firm takes on any business, then a part of its management process will be to fix as many costs as it can for that business, from wages to rent, raw material prices, energy and so on. Foreign exchange or commodity risk is really no different and needs to be put in that context.

It is also worth remembering that no hedge lasts forever. However much is hedged, or far forward, the next marginal sale is un-hedged.

6.7 Hedging and the risk framework

It is often heard in business that a commercial transaction is undertaken because the risk can be hedged away, that there is a market in a certain instrument and that this validates the transaction. While that approach is possible, it does short circuit the risk framework where the whole issue of risk can be put in context. An approach which avoids the risk framework and possibly also avoids the enterprise risk approach is likely to get it wrong.

Example 13: Short circuiting the risk framework

Gold plc (which has experienced high staff turnover in sensitive areas) wishes to establish a Long Term Incentive Plan (LTIP) whereby employees are awarded a certain number of free shares in the company after a qualifying period. The remuneration committee approves this on the basis that the risk of the shares rising in price between entitlement and award can be hedged.

Gold (which cannot simply issue shares at entitlement because award is uncertain) can either buy shares in the market or take out a contract for differences to hedge the risk of a rising share price.

The terms and conditions of contracts for difference are not attractive to Gold because of expense and use of credit facilities and so Gold buys shares in the market and places them in a trust. This uses up cash and so threatens expenditure plans.

Gold did not consider the whole enterprise issues around the LTIP, because it bypassed enterprise risk management and a risk framework.

In the event the shares fell and Gold suffered an opportunity loss along with the cash locked up.

So the cost of the hedge must always be justified by reference to the size and the likelihood of the potential un-hedged loss (which is being hedged against).

6.8 Internal and external hedging

Firms use hedging techniques to reduce their exposure to various risks. Hedging can be performed internally within the firm (i.e. the 'reduce' risk response) or externally by involving third parties (i.e. the 'transfer' risk response). And it can be done through the financial markets (including insurance) or commercially.
Generally, treasury is directly involved in financial hedging solutions; however it needs to be aware of the financial consequences of commercial hedging solutions.

Exhibit 6: Examples of hedging action

Risk type	Risk	Hedging action
Internal (reduce) - Commercial	Firm runs out of inventory.	Maintain a minimum one week's supply of inventory.
Internal (reduce) - Financial	Value of profit earned in foreign currency falls in home currency terms.	Match sales and costs per currency.
External (transfer) - Commercial	Price of inventory rises.	Agree fixed price contract with inventory supplier.
External (transfer) - Financial	Value of profit earned in foreign currency falls in home currency terms.	Use forward foreign exchange transactions to fix the value of profit.

Exhibit 6 shows how hedging actions can be combined to manage FX risk – to reduce the risk of foreign currency fluctuations eroding profit, either or both of an internal and external method can be used. The example also shows how different risks can apply to the same item, in this case inventory.