

- (a) The bank is being asked to buy the Danish kroners and will give the exporter:

$$\frac{150,000}{9.5380} = \text{£}15,726.57 \text{ in exchange}$$

- (b) The bank is being asked to sell the yen to the importer and will charge for the currency:

$$\frac{1,000,000}{203.650} = \text{£}4,910.39$$

1.3 The foreign exchange (FX) markets

Banks buy currency from customers and sell currency to customers – typically, **exporting and importing firms**. Banks may buy currency from the **government** or sell currency to the government – this is how a government builds up its official reserves. Banks also buy and sell currency **between themselves**.

International trade involves foreign currency, for either the buyer, the seller, or both (for example, a Saudi Arabian firm might sell goods to a UK buyer and invoice for the goods in US dollars). As a consequence, it is quite likely that exporters might want to sell foreign currency earnings to a bank in exchange for domestic currency, and that importers might want to buy foreign currency from a bank in order to pay a foreign supplier.

Since most foreign exchange rates are not fixed but are allowed to vary, rates are continually changing and each bank will offer new rates for new customer enquiries according to how its dealers judge the market situation.

2 Foreign currency risk

Pilot Paper

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Currency risk occurs in three forms: **transaction exposure** (short-term), **economic exposure** (effect on present value of longer term cash flows) and **translation exposure** (book gains or losses).

2.1 Translation risk

This is the risk that the organisation will make exchange losses when the accounting results of its foreign branches or subsidiaries are **translated** into the home currency. Translation losses can result, for example, from restating the book value of a foreign subsidiary's assets at the exchange rate on the statement of financial position date.

2.2 Transaction risk

This is the risk of adverse exchange rate movements occurring in the course of **normal international trading transactions**. This arises when the prices of imports or exports are fixed in foreign currency terms and there is movement in the exchange rate between the date when the price is agreed and the date when the cash is paid or received in settlement.

Much international trade involves credit. An importer will take credit often for several months and sometimes longer, and an exporter will grant credit. One consequence of taking and granting credit is that international traders will know in advance about the receipts and payments arising from their trade. They will know:

- What foreign currency they will receive or pay
- When the receipt or payment will occur
- How much of the currency will be received or paid

The great danger to profit margins is in the **movement in exchange rates**. The risk faces (i) exporters who invoice in a foreign currency and (ii) importers who pay in a foreign currency.



Question

Changes in exchange rates

Bulldog Ltd, a UK company, buys goods from Redland which cost 100,000 Reds (the local currency). The goods are re-sold in the UK for £32,000. At the time of the import purchase the exchange rate for Reds against sterling is 3.5650 – 3.5800.

Required

- (a) What is the expected profit on the re-sale?
 (b) What would the actual profit be if the spot rate at the time when the currency is received has moved to:
 (i) 3.0800 – 3.0950
 (ii) 4.0650 – 4.0800?

Ignore bank commission charges.

Answer

- (a) Bulldog must buy Reds to pay the supplier, and so the bank is selling Reds. The expected profit is as follows.

	£
Revenue from re-sale of goods	32,000.00
Less cost of 100,000 Reds in sterling ($\div 3.5650$)	<u>28,050.49</u>
Expected profit	<u>3,949.51</u>

- (b) (i) If the actual spot rate for Bulldog to buy and the bank to sell the Reds is 3.0800, the result is as follows.

	£
Revenue from re-sale	32,000.00
Less cost ($100,000 \div 3.0800$)	<u>32,467.53</u>
Loss	<u>(467.53)</u>

- (ii) If the actual spot rate for Bulldog to buy and the bank to sell the Reds is 4.0650, the result is as follows.

	£
Revenue from re-sale	32,000.00
Less cost ($100,000 \div 4.0650$)	<u>24,600.25</u>
Profit	<u>7,399.75</u>

This variation in the final sterling cost of the goods (and thus the profit) illustrated the concept of transaction risk.

2.3 Economic risk

This refers to the effect of exchange rate movements on the **international competitiveness** of a company and refers to the effect on the present value of longer term cash flows. For example, a UK company might use raw materials which are priced in US dollars, but export its products mainly within the EU. A depreciation of sterling against the dollar or an appreciation of sterling against other EU currencies will both erode the competitiveness of the company. Economic exposure can be difficult to avoid, although **diversification of the supplier and customer base** across different countries will reduce this kind of exposure to risk.

4.1 Risk and risk management

Risk management describes the policies which a firm may adopt and the techniques it may use to manage the risks it faces. **Exposure** means being open to or vulnerable to risk. If entrepreneurship is about risk, why should businesses want to 'manage' risk? Broadly, there are two reasons why risk management makes good business sense.

- (a) Firstly, a business may wish to reduce **risks** to which it is exposed to acceptable levels. What is an acceptable level of risk may depend upon various factors, including the scale of operations of the business and the degree to which its proprietors or shareholders are risk-averse.
- (b) Secondly, a business may wish to avoid **particular kinds of risks**. For example, a business may be averse to taking risks with exchange rates. The reasons may include the fact that the risks are simply **too great** for the business to bear, for example if exchange rate movements could easily bankrupt the business.

4.2 Currency of invoice

One way of avoiding exchange risk is for an exporter to **invoice his foreign customer in his domestic currency**, or for an importer to arrange with his **foreign supplier to be invoiced in his domestic currency**. However, although either the exporter or the importer can avoid any exchange risk in this way, only one of them can deal in his domestic currency. The other must accept the exchange risk, since there will be a period of time elapsing between agreeing a contract and paying for the goods (unless payment is made with the order).

If a UK exporter is able to quote and invoice an overseas buyer in sterling, then the foreign exchange risk is in effect **transferred** to the overseas buyer. An alternative method of achieving the same result is to negotiate contracts expressed in the foreign currency but specifying a fixed rate of exchange as a condition of the contract.

There are certain advantages in invoicing in a foreign currency which might persuade an exporter to take on the exchange risk.

- (a) There is the possible **marketing advantage** by proposing to invoice in the buyer's own currency, when there is competition for the sales contract.
- (b) The exporter may also be able to **offset** payments to his own suppliers in a particular foreign currency against receipts in that currency.
- (c) By arranging to sell goods to customers in a foreign currency, a UK exporter might be able to **obtain a loan** in that currency at a **lower rate of interest** than in the UK, and at the same time obtain cover against exchange risks by arranging to repay the loan out of the proceeds from the sales in that currency.

4.3 Matching receipts and payments

A company can reduce or eliminate its foreign exchange transaction exposure by **matching** receipts and payments. Wherever possible, a company that expects to make payments and have receipts in the same foreign currency should plan to **offset its payments against its receipts in the currency**. Since the company will be setting off foreign currency receipts against foreign currency payments, it does not matter whether the currency strengthens or weakens against the company's 'domestic' currency because there will be no purchase or sale of the currency.

The process of matching is made simpler by having **foreign currency accounts** with a bank. Receipts of foreign currency can be credited to the account pending subsequent payments in the currency. (Alternatively, a company might invest its foreign currency income in the country of the currency – for example it might have a bank deposit account abroad – and make payments with these overseas assets/deposits.)

4.4 Matching assets and liabilities

A company which expects to receive a substantial amount of income in a foreign currency will be concerned that this currency may weaken. It can hedge against this possibility by borrowing in the foreign currency and using the foreign receipts to repay the loan. For example, US dollar debtors can be hedged by taking out a US dollar overdraft. In the same way, US dollar trade creditors can be matched against a US dollar bank account which is used to pay the creditors.

A company which has a long-term foreign investment, for example an overseas subsidiary, will similarly try to **match its foreign assets** (property, plant etc) by a **long-term loan in the foreign currency**.

4.5 Leading and lagging

Companies might try to use:

- **Lead payments** (payments in advance)
- **Lagged payments** (delaying payments beyond their due date)

in order to take advantage of foreign exchange rate movements. With a lead payment, paying in advance of the due date, there is a **finance cost** to consider. This is the interest cost on the money used to make the payment, but early settlement discounts may be available.

4.6 Netting

Unlike matching, netting is not technically a method of managing exchange risk. However, it is conveniently dealt with at this stage. The objective is simply to save transactions costs by netting off inter-company balances before arranging payment. Many **multinational groups** of companies engage in **intra-group trading**. Where related companies located in different countries trade with one another, there is likely to be inter-company indebtedness denominated in different currencies.

Key term

Netting is a process in which credit balances are netted off against debit balances so that only the reduced net amounts remain due to be paid by actual currency flows.

Netting has the following advantages.

- (a) **Foreign exchange purchase** costs, including commission and the spread between selling and buying rates, and money transmission costs are **reduced**.
- (b) There is **less loss in interest** from having money in transit.

Local laws and regulations need to be considered before netting is used, as netting is restricted by some countries.

4.6.1 Example: Netting

A and B are respectively UK and US based subsidiaries of a Swiss based holding company. At 31 March 20X5, A owed B SFr300,000 and B owed A SFr220,000. Netting can reduce the value of the intercompany debts: the two intercompany balances are set against each other, leaving a net debt owed by A to B of SFr 80,000 (SFr300,000 – 220,000).

4.7 Forward exchange contracts

12/08

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A **forward contract** specifies in advance the rate at which a specified quantity of currency will be bought and sold.

4.7.1 Forward exchange rates

As you will already appreciate, a forward exchange rate might be higher or lower than the spot rate. If it is higher, the quoted currency will be cheaper forward than spot. For example, if in the case of Swiss francs against sterling (i) the spot rate is 2.1560 – 2.1660 and (ii) the three months forward rate is 2.2070 – 2.2220:

- (a) A bank would sell 2,000 Swiss francs:
- (i) At the spot rate, now, for £927.64

$$\left(\frac{2,000}{2.1560} \right)$$
 - (ii) In three months time, under a forward contract, for £906.21

$$\left(\frac{2,000}{2.2070} \right)$$
- (b) A bank would buy 2,000 Swiss francs
- (i) At the spot rate, now, for £923.36

$$\left(\frac{2,000}{2.1660} \right)$$
 - (ii) In three months time, under a forward contract, for £900.09

$$\left(\frac{2,000}{2.2220} \right)$$

In both cases, the quoted currency (Swiss franc) would be worth less against sterling in a forward contract than at the current spot rate. This is because it is quoted forward 'at a discount', against sterling.

If the forward rate is thus higher than the spot rate, then it is 'at a discount' to the spot rate.

The forward rate can be calculated today without making any estimates of future exchange rates. **Future exchange rates** depend largely on future events and will often turn out to be very different from the forward rate. However, the forward rate is probably an **unbiased predictor of the expected value of the future exchange rate**, based on the information available today. It is also likely that the spot rate will move in the direction indicated by the forward rate.

4.7.2 Forward exchange contracts

Forward exchange contracts hedge against transaction exposure by allowing the importer or exporter to arrange for a bank to sell or buy a quantity of foreign currency at a future date, at a **rate of exchange determined** when the **forward contract is made**. The trader will know in advance either how much local currency he will receive (if he is selling foreign currency to the bank) or how much local currency he must pay (if he is buying foreign currency from the bank).

Forward contracts are very popular with small companies. The current spot price is irrelevant to the outcome of a forward contract.

Key term

A **forward exchange contract** is:

- (a) An immediately firm and binding contract, eg between a bank and its customer
- (b) For the purchase or sale of a specified quantity of a stated foreign currency
- (c) At a rate of exchange fixed at the time the contract is made
- (d) For performance (delivery of the currency and payment for it) at a future time which is agreed when making the contract (This future time will be either a specified date, or any time between two specified dates.)

4.7.3 Example: Forward exchange contracts (1)

A UK importer knows on 1 April that he must pay a foreign seller 26,500 Swiss francs in one month's time, on 1 May. He can arrange a forward exchange contract with his bank on 1 April, whereby the bank undertakes to sell the importer 26,500 Swiss francs on 1 May, at a fixed rate of say 2.6400 to the £.

The UK importer can be certain that whatever the spot rate is between Swiss francs and sterling on 1 May, he will have to pay on that date, at this forward rate:

$$\frac{26,500}{2.6400} = \text{£}10,037.88$$

- (a) If the spot rate is **lower than 2.6400**, the importer would have successfully protected himself against a weakening of sterling, and would have avoided paying more sterling to obtain the Swiss francs.
- (b) If the spot rate is **higher than 2.6400**, sterling's value against the Swiss franc would mean that the importer would pay more under the forward exchange contract than he would have had to pay if he had obtained the francs at the spot rate on 1 May. He cannot avoid this extra cost, because a forward contract is binding.

Thus a foreign currency liability (SFr payment) has been hedged by a foreign currency asset (SFr deposit).

4.7.4 What happens if a customer cannot satisfy a forward contract?

A customer might be unable to satisfy a forward contract for any one of a number of reasons.

- (a) An **importer** might find that:
 - (i) His supplier **fails to deliver the goods** as specified, so the importer will not accept the goods delivered and will not agree to pay for them
 - (ii) The **supplier sends fewer goods** than expected, perhaps because of supply shortages, and so the importer has less to pay for
 - (iii) The supplier is **late with the delivery**, and so the importer does not have to pay for the goods until later than expected
- (b) An **exporter** might find the same types of situation, but in reverse, so that he does not receive any payment at all, or he receives more or less than originally expected, or he receives the expected amount, but only after some delay.

4.7.5 Close-out of forward contracts

If a customer cannot satisfy a forward exchange contract, the bank will make the customer fulfil the contract.

- (a) If the customer has arranged for the bank to buy currency but then cannot deliver the currency for the bank to buy, the bank will:
 - (i) **Sell currency** to the **customer** at the **spot rate** (when the contract falls due for performance)
 - (ii) **Buy the currency back**, under the terms of the **forward exchange contract**
- (b) If the customer has contracted for the bank to sell him currency, the bank will:
 - (i) **Sell** the customer the **specified amount of currency** at the **forward exchange rate**
 - (ii) **Buy back** the **unwanted currency** at the **spot rate**

Thus, the bank arranges for the customer to perform his part of the forward exchange contract by either selling or buying the 'missing' currency at the spot rate. These arrangements are known as **closing out** a forward exchange contract.

4.8 Money market hedging

12/08

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Money market hedging involves borrowing in one currency, converting the money borrowed into another currency and putting the money on deposit until the time the transaction is completed, hoping to take advantage of favourable exchange rate movements.

Because of the close relationship between forward exchange rates and the interest rates in the two currencies, it is possible to 'manufacture' a forward rate by using the spot exchange rate and money market lending or borrowing. This technique is known as a **money market hedge** or **synthetic forward**.

4.8.1 Setting up a money market hedge for a foreign currency payment

Suppose a British company needs to **pay** a Swiss creditor in Swiss francs in three months time. It does not have enough cash to pay now, but will have sufficient in three months time. Instead of negotiating a forward contract, the company could:

- Step 1** Borrow the appropriate amount in pounds now
- Step 2** Convert the pounds to francs immediately
- Step 3** Put the francs on deposit in a Swiss franc bank account
- Step 4** When the time comes to pay the company:
 - (a) Pays the creditor out of the franc bank account
 - (b) Repays the pound loan account

The effect is exactly the same as using a forward contract, and will usually cost almost exactly the same amount. If the results from a money market hedge were very different from a forward hedge, speculators could make money without taking a risk. Therefore market forces ensure that the two hedges produce very similar results.

4.8.2 Example: Money market hedge (1)

A UK company owes a Danish creditor Kr3,500,000 in three months time. The spot exchange rate is Kr/£ 7.5509 – 7.5548. The company can borrow in Sterling for 3 months at 8.60% per annum and can deposit kroners for 3 months at 10% per annum. What is the cost in pounds with a money market hedge and what effective forward rate would this represent?

Solution

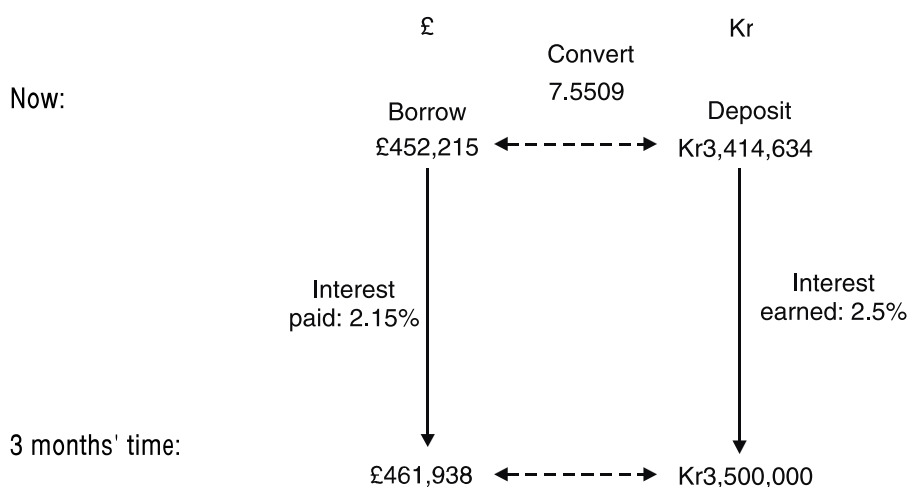
The interest rates for 3 months are 2.15% to borrow in pounds and 2.5% to deposit in kroners. The company needs to deposit enough kroners now so that the total including interest will be Kr3,500,000 in three months' time. This means depositing:

$$\text{Kr}3,500,000 / (1 + 0.025) = \text{Kr}3,414,634.$$

These kroners will cost £452,215 (spot rate 7.5509). The company must borrow this amount and, with three months interest of 2.15%, will have to repay:

$$£452,215 \times (1 + 0.0215) = £461,938.$$

Thus, in three months, the Danish creditor will be paid out of the Danish bank account and the company will effectively be paying £461,938 to satisfy this debt. The effective forward rate which the company has 'manufactured' is $3,500,000 / 461,938 = 7.5768$. This effective forward rate shows the kroner at a discount to the pound because the kroner interest rate is higher than the sterling rate.



The foreign currency **asset hedges** the foreign currency **liability**.

4.8.3 Setting up a money market hedge for a foreign currency receipt

A similar technique can be used to cover a foreign currency **receipt** from a debtor. To manufacture a forward exchange rate, follow the steps below.

- Step 1** Borrow an appropriate amount in the foreign currency today
- Step 2** Convert it immediately to home currency
- Step 3** Place it on deposit in the home currency
- Step 4** When the debtor's cash is received:
- Repay the foreign currency loan
 - Take the cash from the home currency deposit account

4.8.4 Example: money market hedge (2)

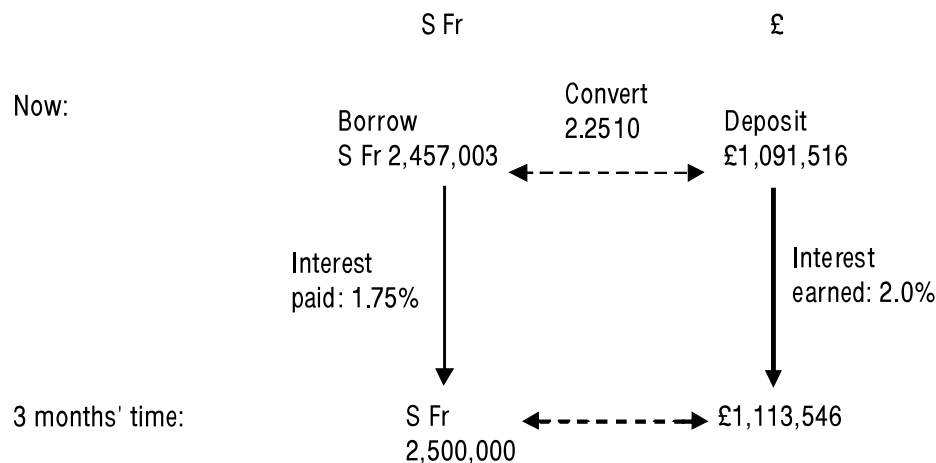
A UK company is owed SFr 2,500,000 in three months time by a Swiss company. The spot exchange rate is SFr/£ 2.2498 – 2.2510. The company can deposit in Sterling for 3 months at 8.00% per annum and can borrow Swiss Francs for 3 months at 7.00% per annum. What is the receipt in pounds with a money market hedge and what effective forward rate would this represent?

Solution

The interest rates for 3 months are 2.00% to deposit in pounds and 1.75% to borrow in Swiss francs. The company needs to borrow SFr 2,500,000/1.0175 = SFr 2,457,003 today. These Swiss francs will be converted to £ at 2,457,003/2.2510 = £1,091,516. The company must deposit this amount and, with three months interest of 2.00%, will have earned

$$£1,091,516 \times (1 + 0.02) = £1,113,346$$

Thus, in three months, the loan will be paid out of the proceeds from the debtor and the company will receive £1,113,346. The effective forward rate which the company has 'manufactured' is 2,500,000/1,113,346 = 2.2455. This effective forward rate shows the Swiss franc at a premium to the pound because the Swiss franc interest rate is lower than the sterling rate.



4.9 Choosing between a forward contract and a money market hedge

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The choice between forward and money markets is generally made on the basis of which method is **cheaper**, with other factors being of limited significance.

4.9.1 Choosing the hedging method

When a company expects to receive or pay a sum of foreign currency in the next few months, it can choose between using the **forward exchange market** and the **money market** to hedge against the foreign exchange risk. Other methods may also be possible, such as **making lead payments**. The cheapest method available is the one that ought to be chosen.

4.9.2 Example: Choosing the cheapest method

Trumpton plc has bought goods from a US supplier, and must pay \$4,000,000 for them in three months time. The company's finance director wishes to hedge against the foreign exchange risk, and the three methods which the company usually considers are:

- Using **forward exchange contracts**
- Using **money market borrowing or lending**
- Making **lead payments**

The following annual interest rates and exchange rates are currently available.

	US dollar		Sterling	
	Deposit rate	Borrowing rate	Deposit rate	Borrowing rate
	%	%	%	%
1 month	7	10.25	10.75	14.00
3 months	7	10.75	11.00	14.25
	<i>\$/£ exchange rate (\$ = £1)</i>			
Spot	1.8625 – 1.8635			
1 month forward	1.8565 – 1.8577			
3 months forward	1.8445 – 1.8460			

Which is the cheapest method for Trumpton plc? Ignore commission costs (the bank charges for arranging a forward contract or a loan).

Solution

The three choices must be compared on a similar basis, which means working out the cost of each to Trumpton either now or in three months time. In the following paragraphs, the cost to Trumpton now will be determined.

Choice 1: the forward exchange market

Trumpton must buy dollars in order to pay the US supplier. The exchange rate in a forward exchange contract to buy \$4,000,000 in three months time (bank sells) is 1.8445.

The cost of the \$4,000,000 to Trumpton in three months time will be:

$$\frac{\$4,000,000}{1.8445} = \text{£}2,168,609.38$$

This is the cost in **three months**. To work out the cost now, we could say that by deferring payment for three months, the company is:

- Saving having to borrow money now at 14.25% a year to make the payment now, or
- Avoiding the loss of interest on cash on deposit, earning 11% a year

The choice between (a) and (b) depends on whether Trumpton plc needs to borrow to make any current payment (a) or is cash rich (b). Here, assumption (a) is selected, but (b) might in fact apply.

At an annual interest rate of 14.25% the rate for three months is $14.25/4 = 3.5625\%$. The 'present cost' of £2,168,609.38 in three months time is:

$$\frac{\text{£}2,168,609.38}{1.035625} = \text{£}2,094,010.26$$

Choice 2: the money markets

Using the money markets involves

- Borrowing in the foreign currency**, if the company will eventually receive the currency
- Lending in the foreign currency**, if the company will eventually pay the currency. Here, Trumpton will pay \$4,000,000 and so it would lend US dollars.

It would lend enough US dollars for three months, so that the principal repaid in three months time plus interest will amount to the payment due of \$4,000,000.

- (a) Since the US dollar deposit rate is 7%, the rate for three months is approximately $7/4 = 1.75\%$.
 (b) To earn \$4,000,000 in three months time at 1.75% interest, Trumpton would have to lend now:

$$\frac{\$4,000,000}{1.0175} = \$3,931,203.93$$

These dollars would have to be purchased now at the spot rate of (bank sells) \$1.8625. The cost would be:

$$\frac{\$3,931,203.93}{1.8625} = \text{£}2,11,713.52$$

By lending US dollars for three months, Trumpton is matching eventual receipts and payments in US dollars, and so has hedged against foreign exchange risk.

Choice 3: lead payments

Lead payments should be considered when the currency of payment is expected to strengthen over time, and is quoted forward at a premium on the foreign exchange market. Here, the cost of a lead payment (paying \$4,000,000 now) would be $\$4,000,000 \div 1.8625 = \text{£}2,147,651.01$.

Summary

	£
Forward exchange contract	2,094,010.26 (cheapest)
Currency lending	2,110,713.52
Lead payment	2,147,651.01

5 Foreign currency derivatives

12/08

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Foreign currency derivatives can be used to hedge foreign currency risk. **Futures contracts, options and swaps** are types of derivative.

5.1 Currency futures

FAST FORWARD

Currency futures are standardised contracts for the sale or purchase at a set future date of a set quantity of currency.

A **future** represents a commitment to an additional transaction in the future **that limits the risk** of existing commitments.

Currency futures are not nearly as common as forward contracts, and their market is much smaller.

Key term

A currency future is a standardised contract to buy or sell a specified quantity of foreign currency.

A currency future is essentially a standardised, market-traded forward exchange contract.

A **Futures market** is an exchange-traded market for the purchase or sale of a standard quantity of an underlying item such as currencies, commodities or shares, for settlement at a future date at an agreed price.

The **contract size** is the fixed minimum quantity of commodity which can be bought or sold using a futures contract. In general, dealing on futures markets must be in a **whole number** of contracts.

The **contract price** is the price at which the futures contract can be bought or sold. For all currency futures the contract price is in US dollars. The contract price is the figure which is traded on the futures exchange. It changes continuously and is the basis for computing gains or losses.

The **settlement date** (or delivery date, or expiry date) is the date when trading on a particular futures contract stops and all accounts are settled. On the International Monetary Market (IMM), the settlement dates for all currency futures are at the end of March, June, September and December.

A future's price may be different from the spot price, and this difference is the **basis**.

Basis = spot price – futures price

One **tick** is the smallest measured movement in the contract price. For currency futures this is a movement in the fourth decimal place.

Market traders will compute gains or losses on their futures positions by reference to the number of ticks by which the contract price has moved.

5.1.1 Example: futures contract

Exam focus point

You will **not** be expected to do futures calculations in the exam but the following example will help you to understand how they work.

A US company buys goods worth €720,000 from a German company payable in 30 days. The US company wants to hedge against the € strengthening against the dollar.

Current spot is 0.9215 – 0.9221 \$/€ and the € futures rate is 0.9245 \$/€.

The standard size of a 3 month € futures contract is €125,000.

In 30 days time the spot is 0.9345 – 0.9351 \$/€.

Closing futures price will be 0.9367.

Evaluate the hedge.

Solution

Step 1 Setup

(a) **Which contract?**

We assume that the three month contract is the best available.

(b) **Type of contract**

We need to buy € or sell \$.

As the futures contract is in €, we need to buy futures.

(c) **Number of contracts**

$$\frac{720,000}{125,000} = 5.76, \text{ say } 6 \text{ contracts}$$

(d) **Tick size**

$$\text{Minimum price movement} \times \text{contract size} = 0.0001 \times 125,000 = \$12.50$$

Step 2 Closing futures price

We're told it will be 0.9367

Step 3 Hedge outcome

(a) **Outcome in futures market**

Opening futures price	0.9245	Buy at low price
Closing futures price	0.9367	Sell at high price
Movement in ticks	122 ticks	Profit
Futures profit/loss	122 × \$12.50 × 6 contracts = \$9,150	

(b) **Net outcome**

	\$
Spot market payment ($720,000 \times 0.9351$ \$/£)	673,272
Futures market profit	(9,150)
	<u>664,122</u>

5.1.2 Advantages of futures to hedge risks

- (a) **Transaction** costs should be **lower** than other hedging methods.
- (b) Futures are **tradeable** and can be bought and sold on a secondary market so there is **pricing transparency**, unlike forward contracts where prices are set by financial institutions.
- (c) The **exact date of receipt or payment** of the currency does **not have to be known**, because the futures contract does not have to be closed out until the actual cash receipt or payment is made.

5.1.3 Disadvantages of futures

- (a) The **contracts cannot be tailored** to the user's exact requirements.
- (b) **Hedge inefficiencies** are caused by having to deal in a **whole number of contracts** and by **basis risk** (the risk that the futures contract price may move by a different amount from the price of the underlying currency or commodity) .
- (c) Only a **limited number of currencies** are the subject of futures contracts (although the number of currencies is growing, especially with the rapid development of Asian economies).
- (d) Unlike options (see below), they do not allow a company to take advantage of favourable currency movements.

5.2 Currency options

FAST FORWARD

Currency options protect against **adverse exchange rate movements** while allowing the investor to take advantage of favourable exchange rate movements. They are particularly useful in situations where the cash flow is not certain to occur (eg when tendering for overseas contracts).

Key term

A currency **option** is a right of an option holder to buy (call) or sell (put) foreign currency at a specific exchange rate at a future date.

The exercise price for the option may be the same as the current spot rate, or it may be more favourable or less favourable to the option holder than the current spot rate.

Companies can choose whether to buy:

- (a) A tailor-made currency option from a bank, suited to the company's specific needs. These are **over-the-counter** (OTC) or **negotiated** options, or
- (b) A standard option, in certain currencies only, from an options exchange. Such options are **traded** or **exchange-traded** options.

Buying a currency option involves **paying a premium**, which is the most the buyer of the option can lose.

5.2.1 The purposes of currency options

The purpose of currency options is to reduce or eliminate exposure to currency risks, and they are particularly useful for companies in the following situations:

- (a) Where there is **uncertainty** about **foreign currency receipts or payments**, either in timing or amount. Should the foreign exchange transaction not materialise, the option can be sold on the market (if it has any value) or exercised if this would make a profit.
- (b) To **support the tender** for an **overseas contract**, priced in a foreign currency

- (c) To allow **the publication of price lists** for its goods in a foreign currency
- (d) To protect the import or export of **price-sensitive goods**.

In both situations (b) and (c), the company would not know whether it had won any export sales or would have any foreign currency income at the time that it announces its selling prices. It cannot make a forward exchange contract to sell foreign currency without becoming exposed in the currency.

5.2.2 Drawbacks of currency options

- The **cost** depends on the **expected volatility** of the **exchange rate**.
- Options must be paid for **as soon** as they are **bought**.
- **Tailor-made** options **lack negotiability**.
- Traded options are **not available** in **every currency**.

5.3 Currency swaps

FAST FORWARD

Currency swaps effectively involve the exchange of debt from one currency to another.

Currency swaps can provide a **hedge** against exchange rate movements for longer periods than the forward market, and can be a means of obtaining finance from new countries.

Key term

A **swap** is a formal agreement whereby two organisations contractually agree to exchange payments on different terms, eg in different currencies, or one at a fixed rate and the other at a floating rate' .

In a **currency swap**, the parties agree to swap equivalent amounts of currency for a period. This effectively involves the exchange of debt from one currency to another. Liability on the main debt (the principal) is not transferred and the parties are liable to **counterparty risk**: if the other party defaults on the agreement to pay interest, the original borrower remains liable to the lender.

Consider a UK company X with a subsidiary Y in France which owns vineyards. Assume a spot rate of £1 = 1.6 Euros. Suppose the parent company X wishes to raise a loan of 1.6 million Euros for the purpose of buying another French wine company. At the same time, the French subsidiary Y wishes to raise £1 million to pay for new up-to-date capital equipment imported from the UK. The UK parent company X could borrow the £1 million sterling and the French subsidiary Y could borrow the 1.6 million euros, each effectively borrowing on the other's behalf. They would then swap currencies.

5.3.1 Benefits of currency swaps

- (a) Swaps are **easy to arrange** and are **flexible** since they can be arranged in any size and are reversible.
- (b) **Transaction costs are low**, only amounting to legal fees, since there is no commission or premium to be paid.
- (c) The parties can **obtain the currency they require** without subjecting themselves to the **uncertainties** of the foreign exchange markets.
- (d) The company can gain **access to debt finance in another country** and currency where it is little known, and consequently has a poorer credit rating, than in its home country. It can therefore take advantage of lower interest rates than it could obtain if it arranged the currency loan itself.
- (e) Currency swaps may be used to **restructure the currency base** of the company's liabilities. This may be important where the company is trading overseas and receiving revenues in foreign currencies, but its borrowings are denominated in the currency of its home country. Currency swaps therefore provide a means of reducing exchange rate exposure.
- (f) At the same time as exchanging currency, the company may also be able to **convert fixed rate debt to floating rate or vice versa**. Thus it may obtain some of the benefits of an interest rate swap in addition to achieving the other purposes of a currency swap.
- (g) A currency swap could be used to **absorb excess liquidity** in one currency which is not needed immediately, to create funds in another where there is a need.

In practice, most currency swaps are conducted between banks and their customers. An agreement may only be necessary if the swap were for longer than, say, one year.

5.3.2 Example: Currency swap

Step 1

Edted, a UK company, wishes to invest in Germany. It borrows £20 million from its bank and pays interest at 5%. To invest in Germany, the £20 million will be converted into euros at a spot rate of £1 = €1.5. The earnings from the German investment will be in euros, but Edted will have to pay interest on the swap. The company arranges to swap the £20 million for €30 million with Gordonbear, a company in the Euro currency zone. Gordonbear is thus the counterparty in this transaction. Interest of 6% is payable on the €30 million. Edted can use the €30 million it receives to invest in Germany.

Step 2

Each year when interest is due:

- (a) Edted receives from its German investment cash remittances of €1.8 million ($€30 \text{ million} \times 6\%$).
- (b) Edted passes this €1.8 million to Gordonbear so that Gordonbear can settle its interest liability.
- (c) Gordonbear passes to Edted £1 million ($£20 \text{ million} \times 5\%$).
- (d) Edted settles its interest liability of £1 million with its lender.

Step 3

At the end of the useful life of the investment the original payments are reversed with Edted paying back the €30 million it originally received and receiving back from Gordonbear the £20 million. Edted uses this £20 million to repay the loan it originally received from its UK lender.