



























































The value of one tick is the change in the value of a futures contract from a movement in the price by one tick (= US\$0.0001). Price in US\$, tick value = US\$12.50 (= US\$0.0001 × €125,000) per contract.

- (7) In 30 days' time when the supplier payment must be made, the company should 'close out' its futures position by selling six futures contracts (for the same settlement date as the futures that were originally bought). When a position is closed there is a net gain or loss on the futures transaction.

#### Hedge outcome

Outcome in futures market:

Opening futures price	€1/US\$ 1.3245	Buy at lower price
Closing futures price	€1/US\$ 1.3367	Sell at higher price
Movement in ticks	122 ticks	Profit

Futures profit = 122 × \$12.50 × 6 contracts = \$9,150

- (8) Calculate the final position.

In 30 days' time, the company buys the required € at the spot rate in order to pay the supplier.

If the euro has appreciated against US dollar, as feared, the euros payment will be more expensive, however this will be offset by any profit on the futures contracts. (Conversely, if the euro has depreciated against the US dollar, the cheaper cost of buying the currency would be offset by a loss on the futures contracts.)

#### Net outcome

	US\$
Spot market payment (€720,000 at €1/US\$1.3351)	961,272
Futures market profit	(9,150)
	<u>952,122</u>

This is close to the target exchange rate that was the spot rate on the day the original transaction took place (i.e. €1/US\$1.3221) and which would have cost US\$951,912.

### Section 8.7.2

Page 410

#### Illustration: Currency option

Caldwell Ltd is a Hong Kong based company that exports goods to the Middle East. The company is tendering for a contract to supply specialist electronic equipment to the Government of Saudi Arabia. The tender is to be submitted in the near future, with the tender price quoted in Saudi Arabian riyals. The Government's decision will be made after two months and the time period for delivery of the equipment will be a further two months after the contract is signed. The contract price will be paid on delivery.

Caldwell's management would like to put in a competitive tender price, giving the company a 25% mark-up on incremental costs of \$14.75 million. All Caldwell's costs will be incurred in \$. The company wishes to minimise its exposure to short-term exchange rate movements. The order for the Saudi Arabian Government has been priced using a comparatively low profit mark-up because of the extremely competitive nature of the business. As a result the management is particularly concerned that unexpected movements in the exchange rate could eliminate the company's profit on the order.

The current spot exchange rate is riyal/HK\$2.1246, but the company is concerned that the riyal may weaken. The company's bankers are prepared to sell Caldwell an option to sell riyal at riyal/HK\$2.0798 to be exercised at any time over a 14-day period starting in four months' time. The cost of this option is

4.92 Hong Kong cents per riyal covered and payable in advance.

How could Caldwell use the currency option to hedge its exposure, and illustrate by considering the financial outcome if the riyal/HK\$ exchange rate moves in four months' time to HK\$1.93 or HK\$2.22. (Consider both that Caldwell is awarded the contract and that Caldwell is not awarded the contract.)

**Note.** Since the Hong Kong dollar is pegged against the US dollar, Caldwell could have hedged its exposure by dealing in US dollar options.

As an exporter due to receive a large sum in a foreign currency in four months' time Caldwell does not want the riyal to weaken (i.e. does not want the dollar to strengthen) so the company can take up a position such that if the dollar does strengthen it will make a profit on the options deal. To do this Caldwell should buy a dollar call option. (An alternative strategy would be to buy a riyal put option. Buying a dollar call and selling a riyal put are effectively the same thing.)

Since an option is the right but not the obligation to buy or sell Caldwell does not have to exercise its option if it is not awarded the contract. Given the company's contingent exposure an option may be the preferred hedging strategy.

### Approach

(1) Importing or exporting?

Exporting

(2) What is the value of currency that is exposed?

Riyals 8,865,035 (\*\*)

(\*\*) Caldwell's incremental costs are \$14.75 million. A 25% mark-up gives a target sales price of  $\$14.75\text{m} \times 1.25 = \$18.4375\text{ million}$ . This gives a target profit on the contract of  $\$18.4375\text{m} - \$14.75\text{m} = \$3.6875\text{ million}$ . At the option price offered (riyal/HK\$2.0798) the tender price should be  $\$18.4375\text{m}/2.0798 = \text{riyals } 8,865,035$ .

(3) What is the risk?

Caldwell will receive income from this contract in riyals, but its costs are in dollar. If the riyal depreciates against the dollar, the profit margin (which is not very large) could be eroded or lost.

(4) Buy a call or a put option?

The risk is that the riyal will fall in value against the dollar. The company will be selling its receipts in riyals in exchange for dollars. It should therefore buy a put option on riyals (or buy a call option on dollars) at a price of riyal/HK\$2.0798.

(5) Expiry date for the option?

The option is an over-the-counter option, so the company should select as the exercise date a date by which time it will know whether or not it has won the contract. This will be in about four months' time.

Caldwell should therefore purchase an option to sell 8,865,035 riyals at riyal/HK\$2.0798 for \$18.4375 million. (If the contract is won, then in four months' time Caldwell will receive 8,865,035 riyals from the customer which it will want to exchange into dollars.)

(6) What premium is payable?

Premium =  $4.92\text{ cents} \times 8,865,035 = \$436,160$

**Outcome**

If the company wins the contract and receives 8,865,035 riyals, it has a choice between:

- (a) Letting the option lapse at expiry and selling the riyals at the current spot exchange rate, and
- (b) Exercising the option to sell 8,865,035 riyals at the option exercise price of HK\$2.0798.

	<i>Scenario 1</i>	<i>Scenario 2</i>
Exchange rate – date of receipt	1.93	2.22
Exercise HK\$2.0798 option?	Yes	No
	\$	\$
Cash receipt	18,437,500	19,680,378
Contract costs	(14,750,000)	(14,750,000)
Option premium cost	(436,160)	(436,160)
Profit	<u>3,251,340</u>	<u>4,494,218</u>

If the option is exercised, the contract net profit (after payment of the option premium) is fixed at a minimum of \$3,251,340.

Without the option or any other form of cover if the exchange rate moved to HK\$1.93, the net contract profit would have been only \$(17.109518m – 14.75m – 0.43616m) = \$1,923,358.

If the contract is not won, it would still be worthwhile exercising the option if the spot rate is HK\$1.93. The option would enable the company to make 'windfall' exchange gains of \$18.4375m – (8,865,035 × 1.93) = \$1,327,982. From this the cost of the option, the option premium of \$436,160, must be deducted to give a net exchange gain of \$891,822. However, a loss equal to the premium of \$436,160 is payable if the exchange rate is HK\$2.22. This would have been avoided if no cover had been taken out.

**Section 8.8****Currency swaps****Page 412**

Consider a UK company 'X' with a subsidiary 'Y' in France that owns vineyards. Assume a spot rate of £1/€1.6. Suppose the parent company 'X' wishes to raise a loan of €1.6 million 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 and the French subsidiary 'Y' could borrow the €1.6 million, each effectively borrowing on the other's behalf. They would then swap currencies.

**Section 8.8.1**

Illustration: Currency swap using a bank as counterparty

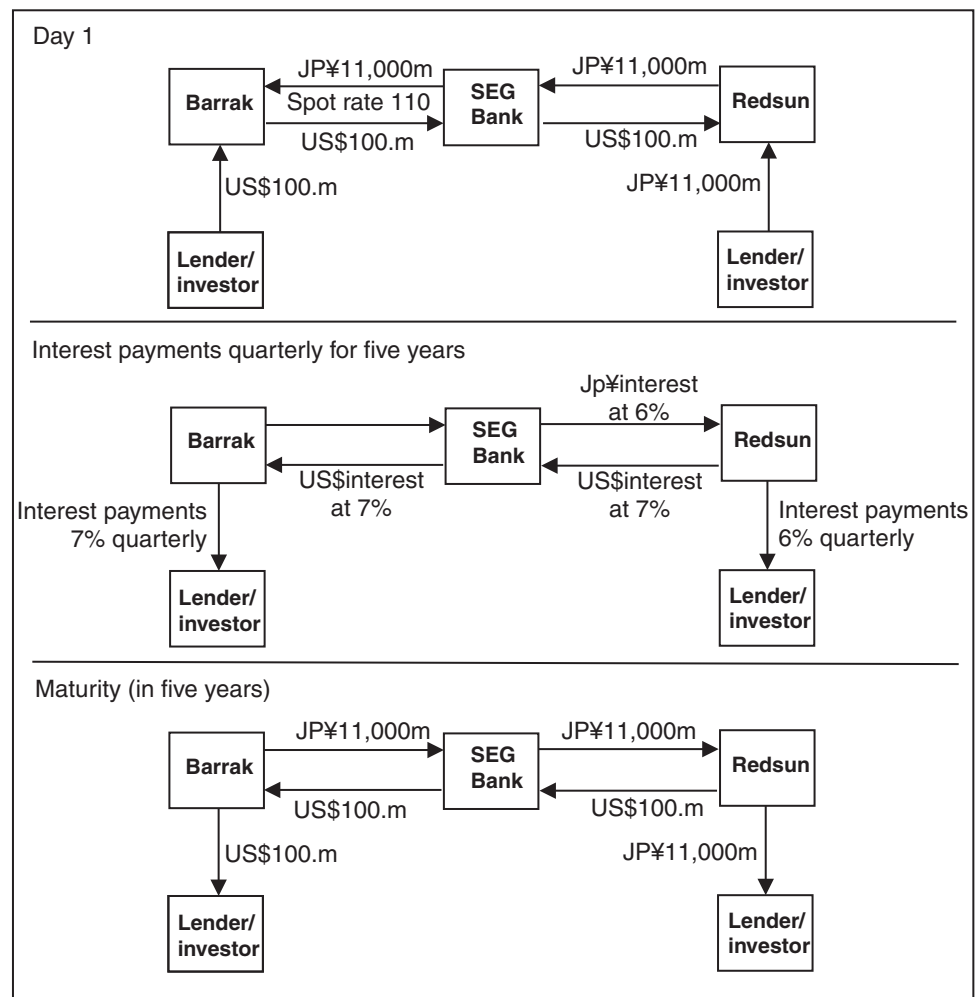
**Page 413**

A Japanese company Redsun Ltd wants to borrow US\$100 million for five years and a US company Barrak Corp. wants to borrow JP¥ 11,000 million, also for five years. SEG Bank is aware of the borrowing requirements of the two companies, and is also aware that Redsun could borrow in yen at a lower interest rate than Barrak, and Barrak could borrow at a lower interest rate than Redsun in US dollars. The current exchange rate is US\$1/JP¥110.

SEG Bank therefore sees an opportunity for a currency swap. Under the swap agreement, the bank would match the needs of the two companies, acting as an intermediary. There would be an agreement on:

- the amount of the principal to swap and the exchange rate. Barrak Corp. will borrow US\$100 million and Redsun will borrow JP¥ 11,000 million, and they will exchange these amounts on day 1 of the swap. It is assumed that Barrak will pay interest at 7% on the dollar loan and Redsun will pay interest at 6% on the yen loan.
- the period of the agreement. The swap will be for five years.
- the swap interest rates payable. Here it is assumed for simplicity that Barrak will pay 6% on the JP¥ 11,000 million received and Redsun will pay 7% interest on the dollars received in the swap.
- the frequency of the exchange of interest. Here it is assumed that interest payments will be exchanged under the swap agreement every three months.

A swap transaction would be completed as shown in the following diagram (ignoring the profit margin for SEG Bank on the transaction):



Ignore bank's profit

Day 1: Barrak borrows US\$100 million and Redsun borrows JP¥ 11,000 million and they swap these amounts.

Every quarter, Redsun pays interest to Barrak at 7% on US\$100 million, and Barrak uses this payment to make the interest payments on its US dollar loan. Barrak pays Redsun interest at 6% on JP¥ 11,000 million and Redsun uses this income to make the interest payments on its yen loan.

At the end of year 5 (end of the swap): The two companies re-exchange the capital amounts. Barrak pays JP¥ 11,000 million to Redsun and Redsun uses this to pay back the yen loan. Redsun pays US\$100 million to Barrak, and Barrak uses this to pay back its dollar loan.

The effect of the swap has been that in effect, Barrak has borrowed for five years in yen, and Redsun has borrowed for five years in US dollars, although the actual loans were in dollars for Barrak and yen for Redsun.

**Exam practice question – DEF**

**Page 430**

DEF is a UK company that regularly trades with companies in the United States. It has a number of transactions listed below, the cash settlement of which will be due in six months:

Receipts from US            US\$6 million  
Payment to US                US\$10 million

The CEO of the company would like to hedge its US\$ exposure by either a forward contract or money market hedge. Relevant information is provided below:

- (i) Spot: £/US\$1.558
- (ii) 6 month forward rate: £/US\$1.500
- (iii) 6 month interest rates to DEF:

	Borrow (%)	Investing (%)
£	6.5	5
US\$	6.0	4

*Required*

Assume you are the CFO of DEF:

- (a) Advise the CEO which alternative should be used. Show all relevant calculations. **(10 marks)**
- (b) The company is also considering using options to hedge its exposure going forward. Discuss the advantages and disadvantages of currency options as a hedging tool compared with forward contracts. **(5 marks)**

**(Total = 15 marks)**

HKICPA June 2012

**Exam practice question – Tin Tin Trading**

**Page 430**

Tin Tin Trading (TTT) Limited is expecting to receive 20 million Foreign Currency (FC\$) in three months' time. The current spot rate is HK\$/FC\$ 23.2060 – 23.2298 (bank sell/bank buy).

*Required*

Estimate the net benefit/costs if the receipts are hedged by using an over-the-counter option from the bank, exercise price HK\$/FC\$23.16, premium cost 14.4 HK cents per 100 FC\$ and the spot rate in the three months moves to:

- (a) HK\$/FC\$25.2000 **(5 marks)**
- (b) HK\$/FC\$21.1200 **(5 marks)**
- (c) In addition to over-the-counter options, certain currency options are traded in the market. What are the advantages and disadvantages of hedging using a 'traded' currency option over a forward contract? **(8 marks)**

HKICPA December 2012

**Answer to  
exam practice  
question –  
DEF**

**Page 725**

(a) Net US\$ exposure = \$10,000,000 – \$6,000,000 = \$4,000,000

**Forward contract**

Cost (£) = US\$ 4,000,000 / 1.5 = £2,666,667

**Money market hedge**

1. Borrow £ now at 6.5%: US\$4,000,000/1.04/1.558 = £2,468,648
2. Convert to US\$ at spot = 2,468,648 × 1.558 = US\$3,846,154
3. At the end of 6 months, US\$ available = US\$ 3,846,154 × 1.04 = US\$4,000,000
4. At the end of 6 months, total £ cost = £2,468,648 × 1.065 = £2,629,110

The cost of a money market hedge is lower by (2,666,667 – 2,629,110) = £37,557.

So use a money market hedge.

(b) **Merits of currency options**

- Opportunity to capture profits when currency moves in favourable direction.
- It is a right, not an obligation, therefore offers flexibility.
- Can close out position before expiry date.
- OTC option can provide a fully hedged arrangement.

**Disadvantages**

- Option premium is expensive.
- Premium must be paid up front.
- Due to contract size, not all currency exposure can be fully hedged.
- Only options for major currencies are available.

**Answer to  
exam practice  
question – Tin  
Tin Trading**

**Page 726**

	(a)	(b)
HK\$/FC\$ spot rate	25.2	21.12
Foreign currency receipts	FC\$20m	FC\$20m
Premium (HK\$ per 100 FC\$)	0.144	0.144
Option exercise price (HK\$/FC\$)	23.16	23.16
When there is no hedging		
Actual receipts	HK\$793,651	HK\$946,970
When option is purchased as hedge:		
Premium paid (FC\$20m/100 × 14.4c)	HK\$28,800	HK\$28,800
Actual receipts * / +	HK\$863,558	HK\$946,970
Net receipts	HK\$834,758	HK\$918,170
Net benefit/(cost) over no hedging	HK\$41,107	(HK\$28,800)

\* Since the option is in the money, it is exercised

+ Since the option is out of the money, it is not exercised



**Obligation to centrally clear certain classes of over-the-counter (OTC) derivatives contracts**

OTC markets facilitate the hedging of risk, but OTC derivatives contracts often have bespoke terms. This gives rise to the risk that a counterparty will fail to meet its obligations under the contract, and the non-defaulting party is exposed to losses due to adverse price movements in the value of the contract until it is able to find a new counterparty. This risk is particularly significant in OTC derivatives contracts, because they may have a term of many years.

This risk can be mitigated by using a central counterparty (CCP) to centrally clear the transaction. Central counterparties already exist for exchange traded derivatives such as futures, and so the same type of arrangement can be extended to standardised OTC transactions. The CCP acts as buyer to every seller, and seller to every buyer, simplifying the network of exposures within the system. Each market participant has an aggregate counterparty exposure to the CCP. This can be preferable to multiple exposures across a range of other, possibly less creditworthy, counterparties.

Central clearing is therefore recognised as a key way to manage risk. Following the financial crisis of 2007-09, G20 leaders agreed to reform the structure of OTC derivatives markets, requiring that contracts which are sufficiently standardised be centrally cleared.

In Europe, the framework for this obligation is established by the European Market Infrastructure Regulation, commonly known as EMIR.

The rules introduce new requirements to improve transparency and reduce the risks associated with the derivatives market by including the obligation to centrally clear certain classes of OTC derivative contracts through CCPs, or apply risk mitigation techniques when they are not.

It requires entities that enter into any form of derivative contract, including interest rate, foreign exchange, equity, credit and commodity derivatives, to:

- Report every derivative contract that they enter into to a trade repository;
- Use a CCP to clear those OTC derivatives that are subject to a mandatory clearing obligation; and
- Implement new risk management standards, including operational processes and exchange of margins, for all bilateral OTC derivatives that are not cleared by a CCP.

A CCP manages the counterparty credit risk that it faces in a number of ways.

- Application of strict membership criteria to would-be participants
- Clearing members provide 'margin' (collateral) in the form of cash or other liquid assets to offset the risks related to their exposures
- Clearing members collect margin from clients to manage their own counterparty exposure
- Clearing members contribute to a mutual default fund, which protects the CCP in the event that the margin it holds is insufficient to cover losses

Margin is provided in two forms: 'initial margin' is posted at the beginning of a transaction to cover potential future adverse changes in the value of the contract, and is recalculated on a regular basis. Additional 'variation margin' is posted to cover actual adverse changes in the market value of the contract during its life.

Although not a member of the G20, Hong Kong has closely followed the proposals. On 30 September 2015, the HKMA and SFC published their proposed steps in the regulation of OTC derivative transactions, being:

Phase 1: mandatory clearing of certain derivative trades, and

Phase 2: a broader mandatory reporting requirement.

As a result of these rules, clearing is required for OTC products in Hong Kong for the first time. Specified OTC derivative transactions must be cleared, and are initially proposed to cover interest rate swaps. Prescribed persons (being authorised financial institutions, licensed corporations and approved money brokers) must clear any specified OTC derivative transactions with a designated CCP within one business day.

---

**Chapter 20 Business failure and insolvency**
**Section 3 HKMA document on recovery planning**
**Page 686**

In 2014, the Hong Kong Monetary Authority issued a supervisory policy providing guidance to authorised institutions on the key elements of effective recovery planning for banks, and setting out the HKMA's approach to reviewing such recovery plans, which must be submitted to the HKMA on a regular basis.

The policy sets out the following key elements in recovery planning:

**Governance structure and oversight**

Recovery plans need to include clear details of governance over all stages of the plan, with assigned responsibilities and decision making processes. The plan should form part of a bank's overall risk management framework.

**Identification of core businesses, material entities, critical functions and critical shared services**

This is a key step, as it forms the basis for establishing recovery priorities. Qualitative and quantitative assessment criteria should be established for the identification of core business functions. A significant amount of management judgement is likely to be required.

**Stress scenarios**

These should be built in order to assess the effectiveness of the recovery plan. Scenarios are likely to be severe in nature, and should encompass those that would be specific to the bank, as well as those that are market-wide.

**Recovery triggers**

A 'trigger framework' should be developed within the existing risk management framework that can help to identify risks before a severe crisis occurs, comprising qualitative and quantitative indicators that are appropriate for the bank's own business and range of operations.

**Recovery options**

Banks should identify and develop a full set of options that can help to restore liquidity, capital levels and, ultimately, going concern viability. Recovery options should not take more than six months to take effect. Banks need to take a long term view of their business viability, and not focus purely upon short term stresses.

**Disposal options**

Disposal of a part or the whole of a bank or its business or assets needs to be included as an option, including unfavourable 'fire sales'. The plan should include sufficient details of the actions required should disposal be necessary.

**Eligibility for central banking facilities**

Banks should not assume any public support for the purposes of their recovery planning, and should not regard 'lender of last resort' support from the HKMA as their prime option. However, 'lender of last resort' support may be available in some circumstances, and banks need to give consideration to the circumstances in which such support may be required. They should include information that can help with an assessment of their eligibility.

---

**Communication plan**

A communication plan should be drawn up for each recovery option. The communications strategy should include identification of key stakeholders, the approach to communications and the staff who will be involved. The bank should also consider the impact that any implementation of a recovery plan, and its communication, will have upon the reputation of the bank.

---