

**DP07**

# **Treasury**

**12 APRIL 2005**

1. Time allowed : Three (3) hours
2. Total number of questions : Six (6) questions
3. Number of questions to be answered : Five (5) questions [20 marks each]
4. Show details of workings where appropriate. Silent, non-programmable calculators may be used.
5. Begin each answer to a new question on a fresh page.
6. Answer **all** questions in **English**.
7. A blank page is provided at the end of the question papers for rough work.

## ANSWER FIVE (5) QUESTIONS ONLY

1. (a) Define the following terminologies:
- (i) Spot exchange rate [1]
  - (ii) Forward exchange rate [1]
  - (iii) LIBOR [1]
  - (iv) Spread [1]
- (b) (i) What caused the end of the Bretton-Wood system? [2]
- (ii) Name **two** disadvantages of the floating exchange rate system. [2]
- (c) Briefly explain the following foreign exchange actions by central banks:
- (i) Sterilised intervention [3]
  - (ii) Concerted intervention [3]
- (d) You are a treasurer of a multinational company in Singapore which exports its products to some 100 countries. The export invoices are mainly denominated in USD and EUR.
- The Board of Directors has asked you to:
- forecast the exchange rate movement between the USD and the EUR; and
  - determine the strategy on the currency of invoice and the need to hedge,
- based on the impact of each of the following expected economic and market developments:
- (i) A fall in the US interest rates to a level lower than the "Euro" interest rates. [2]
  - (ii) A move from a budget surplus to a budget deficit in the US. [2]
  - (iii) A declining economic growth in the US compared to a robust economic growth in the European Union. [2]
- (Total:20 marks)

2. The following rates are quoted:

Item	USD/MYR	GBP/USD	USD/CHF
Spot (14 April 2005)	3.7995/05	1.8790/00	1.1870/80
1-month	-5/+5	35/25	16/6
2-month	0/10	60/50	33/23
3-month	12/2	95/85	65/55
4-month	25/15	115/105	90/80
5-month	40/30	135/125	110/100
6-month	60/50	170/160	140/130

Based on the above rates, calculate the following (assume no margins or charges are imposed and all exchange controls/regulations are complied with):

- (a) Bank sells GBP/USD value spot [1]
- (b) Bank sells USD/CHF value spot [1]

- (c) Bank buys GBP/MYR value 6-month fixed delivery [2]
- (d) Bank sells GBP/MYR option 2-month to 3-month [3]
- (e) Bank sells CHF/MYR option spot to 1-month [3]
- (f) Bank buys CHF/MYR 3-month fixed delivery [2]
- (g) Price quoted to exporter for USD/MYR option 5-month to 6-month [3]
- (h) Price quoted to importer for GBP/MYR option 4-month to 5-month [3]
- (i) A local exporter has earlier entered into a USD350,000 fixed delivery foreign exchange contract for its exports maturing spot date at the rate of 3.8035. Due to a mistake in shipment, the total value of goods shipped amounted to only USD320,000. The exporter will thus be receiving USD320,000 on the maturity date and requested the bank to cancel the balance of the original contract amount. The bank agreed to cancel using the spot selling rate.
  - (i) How much export proceeds in MYR would the exporter receive on the maturity date? [1]
  - (ii) How much profit/loss would the exporter incur when the bank cancels the balance of the original contract? [1]

(Total:20 marks)

3. (a) An interbank dealer entered into a trade in error whereby he bought GBP5million against USD at 1.8750. He reversed the trade immediately. However, by then, the rate has changed to 1.8747/53.

- (i) What was the profit/loss from the above transactions in MYR? (Use USD/MYR rate of 3.800 for your calculations.) [2]
- (ii) The interbank dealer wished to hold the position but would like to limit the loss to USD30,000.  
Determine the rate the dealer would need to set his stop-loss order. [2]

(b) As an interbank dealer, you have made a price in Yen of "10/15" (the big figure was 101) to a broker.

- (i) Under normal circumstances, what does it mean if the broker responded "5 yours"? [1]
- (ii) Should you honour more than the market standard amount if the broker responded "all yours"? Give a reason for your answer. [1]

(c) (i) You were given the following USD/CHF quotations:

Spot rate	1.1920/30
3-month Swiss interest rates	3.00 – 3.10%
3-month US interest rates	1.00 – 1.15%

- (aa) Explain whether the forward rate for USD/CHF is at a premium or discount.[2]
- (bb) State the general formula for calculating forward swap points. [2]
- (ii) Can you use the forward exchange rate to predict future rates? Give a reason for your answer. [2]
- (iii) What are **two** risks of entering into a fixed forward delivery contract with a local bank? [2]

(d) You are given the following information:

Spot USD/MYR	3.7995/05
3-month USD interest rate (90 days)	2.00%
3-month MYR interest rate (90 days)	3.00%
3-month swap (90 days)	5/15

Assume you have a choice of borrowing USD3million and converting it to MYR equivalent to earn a higher interest rate.

Would you be able to profit from the transaction without taking any exchange rate risk? Support your answers with workings.

(Use the general swap formula and either the spot or forward rate in your calculation. Assume there is no regulation prohibiting such transactions and there are no transaction costs.) [6]  
(Total:20 marks)

4. (a) Since its introduction as a trade financing instrument in 1979, the Ringgit banker's acceptance (BA) remains as one of the most vibrant and well-traded short-term instruments in the Kuala Lumpur money market.

(i) What is a Ringgit BA? [2]

(ii) Explain the difference between a primary Ringgit BA and a secondary Ringgit BA. [2]

(iii) What information is required in calculating the acceptor's commission on a Ringgit BA? [2]

(iv) What sole factor determines the rate of the acceptor's commission on a Ringgit BA? [1]

(v) Silky Bank bought a BA with a face value of RM1million from Twinkle Bank on 14 February 2005 at a BA purchase discount rate of 3.25% per annum. The BA was created on 4 January 2005 and has an original tenor of 91 days.

Calculate the purchase price paid by Silky Bank for the BA on 14 February 2005.

(Answer to 2 decimal places.) [3]

(b) In anticipation of interest rate changes, banks respond by changing their gapping strategy in line with the magnitude and direction of the anticipated interest rate changes.

(i) What is a gapping strategy? [2]

(ii) In a rising interest rate environment, which gapping strategy should a bank adopt and what would this strategy involve? [2]

(iii) Which gapping strategy does not result in liquidity risk? [1]

(c) In Malaysia, loans to non-bank customers are subjected to a reserve cost based on the reserve requirements imposed on banks by the central bank.

(i) If a two-way quote for a 3-month money market placement is 2.50% – 2.75% per annum in the interbank market, what is the best deposit rate a bank can quote to a deposit customer for a 3-month money so that the bank can make a profit of 30 basis points?  
(Answer to 2 decimal places.) [2]

(ii) If the reserve requirement is 10.0% (non-interest bearing), what breakeven all-in loan rate can a bank quote to a non-bank customer for a 3-month loan? Assume that the two-way quote for a 3-month money market placement is 2.50% – 2.75% per annum, as quoted in (c)(i) above.  
(Answer to 2 decimal places.) [3]

(Total:20 marks)

5. (a) For each of the following transactions, state the maturity date and briefly explain your answer:
- (i) A 3-month Ringgit money market placement transacted to start on value date 28 February 2005. [1]
  - (ii) A 6-month Ringgit money market placement transacted to start on value date 7 March 2005 if the maturity date is an unexpected holiday. [1]
  - (iii) A 1-month USD money market placement transacted to start on value date 9 February 2005 if the maturity date is a holiday in Malaysia. [1]
  - (iv) A 2-month SGD money market borrowing transacted to start on value date 25 April 2005 if the maturity date is a Saturday. [1]
  - (v) A 3-month Ringgit money market borrowing transacted to start on value date 31 January 2005 if the maturity date is a Saturday. [1]
- (b) On Wednesday, 6 April 2005, Faith Bank transacted the following foreign exchange and money market transactions:
- Transaction 1:  
Bought USD5million against MYR at USD/MYR 3.8020 value spot.
- Transaction 2:  
Placed USD1million in the interbank money market for 3-month value over tom. Two-way market quoted rate for 3-month USD over tom was quoted at 2.00% – 2.05% per annum.
- Transaction 3:  
Accepted a 1-month deposit of RM3million from an interbank participant value same day. Faith Bank quoted a two-way quote of 2.75% – 2.80% per annum for a 1-month Ringgit deposit.
- Transaction 4:  
Bought a short-term negotiable instrument of deposit (NID) of nominal value RM1million with a remaining maturity of 55 days value same day in the secondary market at a NID purchase rate of 2.60% per annum. The NID has an issued tenor of 91 days and a coupon rate of 2.85% per annum.
- (i) In Transaction 1, what is the value date of this transaction and how much are the proceeds (in Ringgit) that Faith Bank has to pay? [2]
  - (ii) In Transaction 2, what are the value dates of this transaction and the amount of maturity proceeds that Faith Bank will receive? [3]
  - (iii) In Transaction 3, at what rate will Faith Bank accept the deposit and what is the amount of maturity proceeds that Faith Bank has to pay? [2]
  - (iv) In Transaction 4:
    - (aa) What is a short-term NID? [2]
    - (bb) How much proceeds will Faith Bank have to pay to purchase the NID? [2]
- [Answer parts (b)(i), (b)(ii), (b)(iii) and (b)(iv)(bb) to 2 decimal places.]
- (c) In helping to develop the capital markets in Malaysia, the Principal Dealership System for Scripless Securities Trading System (SSTS) securities was revamped in 1996.
- (i) Briefly explain the Principal Dealership System. [2]
  - (ii) What are the responsibilities and obligations of principal dealers under the Principal Dealership System? [2]

(Total:20 marks)

6. (a) Name **two** responsibilities of a Treasury's back-office. [2]
- (b) Briefly explain the uses of the following treasury products:
- (i) Floor [2]
  - (ii) Call option [2]
  - (iii) Islamic debt securities [2]
- (c) (i) In relation to foreign exchange dealings, explain the following:
- (aa) Pre-settlement risk [2]
  - (bb) Settlement risk [2]
- (ii) As a bank treasurer, explain the measures you can take to control the following:
- (aa) Counterparty risk [2]
  - (bb) Liquidity risk [2]
- (d) Briefly explain **two** internal hedging techniques that a company could use to reduce its currency exposure risks. [4]

(Total:20 marks)

## OUTLINE ANSWERS

The comments given in the boxes below indicate the areas of weaknesses the examiners have identified and their advice to future candidates.

### Question 1

- Candidates could not explain the types of intervention actions taken by central banks.
- Candidates could not forecast the exchange rate movement between two currencies and determine the strategy on the currency of invoice and the need to hedge.

1. (a) (i) Buying and selling of currencies, with delivery normally two business day after the date of contract.  
  
(ii) Agreement to buy or sell currencies at a certain future date at a pre-agreed price. Delivery date is by mutual agreement.  
  
(iii) The rate at which funds are offered to first-class banks in London.  
  
(iv) The difference between bid and offer pricing levels of currencies/interest rates.
- (b) (i) The expansionary policy adopted by US in early 1970s created inflationary pressure and the US liabilities to foreign countries also increased as nations held huge amount of USD as their reserves. Under the circumstances, the US raised the price of gold and severed the agreement of fix parity of USD35 per ounce. Since countries pegged their currency to the USD, their currencies floated and caused the end of the Bretton-Wood system.  
  
(ii) Disadvantages of floating exchange rate system (any **two**):
  - increases price uncertainty – volatility in production and employment markets
  - small economies may not have large enough currency markets to maintain liquidity in spot and forward markets
  - speculators may cause extreme price movements
- (c) (i) Sterilised intervention results in no change in money supply of both the home and foreign currencies. Central bank adopts monetary policies to neutralise the increase or decrease in money supplies resulting from the currency intervention.  
  
(ii) Several central banks simultaneously intervene in the market to bring about the desired level of a country's exchange rate.
- (d) (i) Euro-denominated assets are more attractive to wealth holders. Likely to result in an outflow of capital from US to European Union. USD likely to depreciate – hence, hedge US proceeds, invoice more in EUR.  
  
(ii) Deficit budget has to be financed – lead to increase in borrowing by US Government. US interest rate is likely to rise – lead to capital inflow. USD likely to appreciate – invoice more in USD, hedge EUR proceeds.  
  
(iii) Fed may lower interest rate to stimulate growth. USD may be less attractive while EUR remains strong. USD likely to depreciate – hedge US proceeds and invoice more in EUR.

### Question 2

- Candidates did not show full calculations for some parts of the question.
- Candidates should always check that the answers are “logical”, i.e. the rates are in line with the current market quotations.

2. (a) GBP/USD value spot = 1.8800
- (b) USD/CHF value spot = 1.1880
- (c) GBP/MYR value 6-month fixed  
 $= (3.7995 - 60) \times (1.8790 - 170) = 7.0634/5$
- (d) GBP/MYR value 2-month =  $(3.8005 + 10) \times (1.8800 - 50) = 7.1278$   
 GBP/MYR value 3-month =  $(3.8005 - 2) \times (1.8800 - 85) = 7.1122/3$   
 Option rate = 2-month = 7.1278
- (e) CHF/MYR value spot =  $(3.8005) / (1.1870) = 3.2017/8$   
 CHF/MYR value 1-month =  $(3.8005 + 5) / (1.1870 - 16) = 3.2065$   
 Option rate = 1-month rate = 3.2065
- (f) CHF/MYR value 3-month =  $(3.7995 - 12) / (1.1880 - 55) = 3.2120/1$
- (g) USD/MYR value 5-month =  $3.7995 - 40 = 3.7955$   
 USD/MYR value 6-month =  $3.7995 - 60 = 3.7935$   
 Option rate = 6-month = 3.7935
- (h) GBP/MYR value 4-month =  $(3.8005 - 15) \times (1.8800 - 105) = 7.1022$   
 GBP/MYR value 5-month =  $(3.8005 - 30) \times (1.8800 - 125) = 7.0918$   
 Option rate = 4-month = 7.1022
- (i) (i) USD320,000 x 3.8035 = MYR1,217,120
- (ii) Contract cancelled at 3.8005  
 Gain =  $(3.8035 - 3.8005) \times 30,000 = \text{MYR}90$

### Question 3

- Candidates did not provide explanation or reasons for the answers in some parts of the question, as required.
- Answers should be concise and specific. Support answers with calculations or example, as instructed.

3. (a) (i)

GBP	Rate	USD
+5,000,000	1.8750	-9,375,000
-5,000,000	1.8747	+9,373,500
		<b>-1,500</b>

Loss = USD1,500 x 3.8000 = MYR5,700

- (ii) Maximum loss = USD30,000  
 1 pip = GBP5,000,000 x 0.0001 = USD500  
 USD30,000/USD500 = 60 pips  
 Stop-loss = 1.8750 - 0.0060 = 1.8690

- (b) (i) Bought USD5million @ 101.10

- (ii) Yes, if it suits your position.
- (c) (i) (aa) Premium – USD interest rate lower than the CHF interest rate
- (bb) 
$$\frac{\text{Interest differentials} \times \text{Spot rate} \times \text{Number of days}}{\text{Interest basis}} = \text{Swap points}$$

Whereby:

Interest differential = the interest differential between two currencies

Spot rate = Prevailing spot rate

No of days = the number of days of the swap period

Interest basis = 36000

- (ii) No. Forward rate is essentially due to the interest differential between the two currencies over the particular forward rate. It is not a forecast of future rates.
- (iii) Risks of entering into a fixed forward delivery contract with a local bank (any **two**):
- Difficult to source for another bank to take over the obligation
  - Lose the opportunity to take advantage of favourable foreign exchange rate movements.
  - Face exchange rate risk if cash flow of receivables or payables do not match the delivery date of the forward contract.
- (d) Borrow USD 3million and convert to MYR at 3.7995  
 Cover forward @ 3.8005 + 15 points 3.8020  
 Differential 0.0025

Interest rate differential

=  $\frac{\text{Swap points} \times 36000}{\text{Spot rate or forward rate} \times \text{days}}$

=  $\frac{0.0025 \times 36000}{3.8020 \times 90}$

= 0.26%

Borrowing cost in MYR

= USD interest rate + Interest rate differential

= 2.00% + 0.26% = 2.26%

The cost is lower than the 3% interest earned through lending. Hence, it is profitable. (Note: Differential of 0.0015 is also acceptable assuming there is no margin)

#### Question 4

- Candidates could not define what a Ringgit BA is and calculate the purchase price of a BA.
- Candidates could not define what a gapping strategy is and apply it to a given interest rate environment.
- Candidates could not calculate the deposit rate and breakeven all-in rate in the given scenarios.
- Candidates should answer the questions directly and try not to regurgitate facts. They should also ensure handwriting is legible.

4. (a) (i) A Ringgit BA is defined as a usance bill of exchange denominated in Ringgit drawn on and accepted by a commercial or merchant bank in Malaysia and is payable on a specified future date without days of grace. It is negotiable and is created as a means of providing finance to the drawer of the BA for a bona fide trade transaction (such as export, import or domestic trade).
- (ii) A primary Ringgit BA refers to a newly created BA, that is, a BA that is accepted and discounted for the first time while a secondary Ringgit BA refers to a BA that

has been discounted by a financial institution or purchased by an investor that is rediscounted/sold to another financial institution or purchaser/investor.

- (iii) The information required includes:
- Size of BA
  - Tenor of BA created
  - Discounting rate
- (iv) The sole factor is the credit standing of the drawer or customer enjoying the BA facility.
- (v) Number of days held from 5 January to 14 February 2005  
= 27 + 14 = 41 days  
Remaining days of sale date = 91 – 41 = 50 days

Settlement Proceeds  
= FV [1 – (Rate of discount x Tenor/36500)]  
= 1,000,000 [1 – (3.25 x 50/36500)]  
= RM995,547.94/95

- (b) (i) Depending on the interest rate views of a bank and the shape of the existing and expected yield curve, a bank adopts a gapping strategy (usually positive or negative gapping) through a deliberate mismatch of the maturities of assets and liabilities in a Bank's book or balance sheet. Through a deliberate mismatch of its assets and liabilities, the bank's objective is to improve or gain in its interest spread or margin referred also as net interest revenues.
- (ii) In a rising interest rate environment, a bank should adopt a positive gapping strategy and this involves borrowing long and lending short in a moderate upward sloping or flat yield curve so as to profit from a quick parallel rise in interest rates along all tenors on the yield curve and to protect liquidity.
- (iii) A positive gapping strategy does not result in liquidity risk as this involves borrowing long and lending short. In other words, assets mature earlier than liabilities in a positive gapping strategy and hence, do not result in liquidity risk.
- (c) (i) A bank will accept deposit at the market bid rate to break even, i.e. at 2.50%. To make a profit of 30 basis points, the best deposit rate a bank can quote will be  $2.50\% - 0.30\% = 2.20\%$  per annum.
- (ii) A bank will loan to a non-bank customer at market offer rate plus reserve cost, i.e. at 2.75% plus reserve cost.  
Reserve requirement = 10.0% (non-interest bearing)

**Breakeven Effective Rate of Lending**

= [Rate of interest – (Reserve ratio x Return)]/(1 – Reserve ratio)  
= [2.75% – (10% x 0)]/(1 – 10%)  
= 2.75% / 0.90  
= 3.06% per annum

**Question 5**

- Candidates could not calculate the settlement proceeds for loans nor explain what short-term NIDs are.
- They also could not explain the Principal Dealership System and the responsibilities and obligations of principal dealers under this system.

5. (a) (i) 31 May 2005. Since 28 February is the last business day in the month of February, the transaction would be done on a month-end-to-month-end basis.

- (ii) 8 September 2005, the next business day since the original maturity date is an unexpected holiday.
  - (iii) 9 March 2005. The maturity value date for USD transactions is not affected since the United States is not on holiday and settlement can still place in New York for USD transactions.
  - (iv) 27 June 2005, the next business day since the normal maturity date 25 June 2005 falls on a Saturday, a non-business day.
  - (v) 29 April, 2005, the previous business day before the normal maturity date 30 April 2005 which a Saturday, a non-business day as the maturity date for a month-end-to-month-end transaction is not allowed to cross over to a new month. This is also known as the “no-crossing-over-month-end “ rule.
- (b) (i) The value date of the transaction will be Friday, 8 April 2005.  
The proceeds paid by Faith Bank = RM5million x 3.8020  
= RM19,010,000
- (ii) The value dates are 7 April 2005 and 7 July 2005.  
Placement rate would be market bid rate, i.e. 2.00% per annum.  
The maturity proceeds that Faith Bank will receive  
= USD1million + (USD1million x 2.0% x 91 /360)  
= USD1million + USD5,055.55/56  
= USD1,005,055.55/56
- (iii) Faith Bank will accept the deposit at its quoted bid rate, i.e. 2.75% per annum.

**The maturity proceeds that Faith Bank will pay**

$$\begin{aligned}
 &= \text{RM}3.0\text{million} + (\text{RM}3.0\text{million} \times 2.75\% \times 30 /365) \\
 &= \text{RM}3.0\text{million} + \text{RM}6,780.82 \\
 &= \text{RM}3,006,780.82
 \end{aligned}$$

- (iv) (aa) A short-term NID is a NID that has been issued with a maturity date of not earlier than 90 days and not later than 364 days from the date of issue.
- (bb) Issued tenor,  $t = 91$  days  
Remaining tenor,  $d = 55$  days  
Coupon rate,  $c = 2.85\%$   
Purchase rate,  $y = 2.60\%$   
Nominal value,  $NV = \text{RM}1\text{million}$
- NID proceeds  

$$\begin{aligned}
 &= NV \times (36500 + (c \times t)) / (36500 + (y \times d)) \\
 &= \text{RM}1,000,000 \times [36500 + (2.85 \times 91)] / [36500 + (2.60 \times 55)] \\
 &= \text{RM}1,003,175.23
 \end{aligned}$$
- (c) (i) The Principal Dealership System comprises of a group of financial institutions that have been appointed by Bank Negara Malaysia to act as Primary Dealers for approved and designated SSTS (Scripless Securities Trading System) securities in the Malaysian Securities Market. Principal dealers, as a group, underwrite all SSTS issues sold on a tender basis and act as market makers for SSTS securities.
- (ii) The responsibilities and obligations of principal dealers are as follows:
- PDs are obliged to bid (on their own or on behalf of their clients) for at least 10% of each SSTS issue or any other issue specified by BNM.
  - They are to provide reasonable two-way price quotations to all clients and BNM whenever required.

- They are to keep and manage records for themselves and those of their clients separately.
- They are required to provide information as required by BNM from time to time.

### Question 6

Candidates did not provide explanation or reasons for the answers in some parts of the question, as required.

6. (a) Responsibilities of a Treasury's back-office:
- to check whether trades are done within existing counterparty limits
  - to arrange for the delivery of currency payments
  - confirmation of deals
- (b) (i) Floor  
A floor is an over-the-counter interest rate option which allows the buyer to set a minimum rate of interest for a specified future period. The floor is used as a protection against a decline in rates below the strike or floor rate.
- (ii) Call option  
A call option gives the holder the right but not the obligation to buy an underlying asset. A call option is used as a protection against financial market volatility by limiting the loss to amount of the premium of the call option.
- (iii) Islamic debt securities  
Part of the securitisation process that transforms an illiquid asset into tradable security. It can be created out of underlying contracts of the many types of Islamic concepts.
- (c) (i) (aa) Pre-settlement risk – risk that one of the counterparties defaults on a foreign exchange contract before the delivery date.
- (bb) Settlement risk – risk that one of the counterparties may default on the delivery date.
- (ii) (aa) Establishing credit lines to limit the amount and tenor
- (bb) Diversifying investment, monitoring market liquidity schedule and spreading assets maturities.
- (d) Internal hedging techniques (any **two**):
- FX risk shifting
  - Netting of receivables and payables
  - Cross currency matching
  - Centralised invoicing
  - Decentralised invoicing
  - Matching asset and liability exposures
  - Switching currency base
  - Assets and liability adjustments
  - Leading and lagging