CHAPTER 5

CURRENCY EXCHANGE R...
TANDING EQUILIBRIUM VALUE

1. (A) **USD 1800**

    Explanation

    To unwind the forward contract, the investor would enter into a 60-day forward contract to sell GBP. The relevant exchange rate is 1.4621. The value obtained will be in price currency (USD) and would be discounted at USD interest rate for 60 days (at t = 30).

    $$V_t = \frac{(FP_t - FP)(\text{contract size})}{\left[1 + R\left(\dfrac{\text{days}}{360}\right)\right]}$$

    $$= \frac{(1.4621 - 1.4612)(2,000,000)}{\left[1 + 0.0021\left(\dfrac{60}{360}\right)\right]} = 1799$$

    (Module 5.2, LOS 5.d)

    Related Material

    SchweserNotes - Book 1

2. (B) **0.396.**

    Explanation

    F/S = $\left(1 + r_D\right) / \left(1 + r_F\right)$ where the currency is quoted as DC/FC

    F = (1.04/1.05)(0.400) = 0.396

    (Module 5.2, LOS 5.g)

    Related Material

    SchweserNotes - Book 1

3. (A) **increase as the size of the transaction decreases.**

    Explanation

    Bid-ask spreads are size related in that the larger the transaction the larger the spread. (Module 5.1, LOS 5.a)

    Related Material

    SchweserNotes - Book 1

4. (A) **will change to reflect differences in inflation between countries.**
        Explanation
        Purchasing power parity states that exchange rates will change to reflect differences in inflation between countries. Interest rate parity states that exchange rates must change so that risk-adjusted returns on investments in any currency will be equal.
        (Module 5.2, LOS 5.e)
        Related Material
        SchweserNotes - Book 1

5. (A) **Country B**
        Explanation
        Countries with lower initial current account deficits, with import and export prices sensitive to exchange rate movements and with imports and exports with high price elasticity of demand would see their current account deficits quickly restored to sustainable level due to depreciation of their currency. Country B imports goods that have high price elasticity. Country A has large current account deficit and hence will take time to adjust to sustainable level. Country C exports commodities whose global prices are not sensitive to their own currency's values.
        (Module 5.3, LOS 5.j)
        Related Material
        SchweserNotes - Book 1

6. (A) **appreciate.**
        Explanation
        Under the Mundell-Fleming model, country P's currency should appreciate in the short-term as fiscal deficits push interest rates higher. Under the portfolio balance model, such a government that runs a large budget deficit should over time see a decline in the country's currency value —however, this is a long-run rather than short-run effect.
        (Module 5.3, LOS 5.k)
        Related Material
        SchweserNotes - Book 1

7. (B) **the forward rate is an unbiased predictor of the expected future spot rate, and uncovered interest rate parity would hold.**
        Explanation
        The forward rate parity is $F = E(S1)$, meaning that the forward rate is an unbiased predictor of the expected future spot rate. If this is the case, uncovered interest rate parity would be same as covered interest rate parity and since covered interest rate parity holds (by arbitrage), uncovered interest rate parity would also hold.
        (Module 5.2, LOS 5.f)
        Related Material
        SchweserNotes - Book 1

8. (B) **An arbitrage opportunity results in a profit of JPY 292,825.**

Explanation

Step 1: Determine whether an arbitrage opportunity exists.

We can arrange the formula for covered interest rate parity to look like:

$$\left(1\, r_{domestic}\right) - \left[\left(\left(1 + r_{foreign}\right) x\ Forward_{Dc/Fc}\right) / Spot_{Dc/Fc}\right] = 0$$

If this condition holds with the financial data above, there are no arbitrage opportunities.

(1 + 0.01500) − [((1 + 0.04000) x 112.99000) / 116.35000] = 1.01500 − 1.00997

= 0.00503

Since the no arbitrage condition does not hold, we move on to:

Step 2: Borrow Domestic or Foreign?

The sign on the result of step 1 is positive, so borrow foreign.

$(r_d - r_f)$		(Forward - Spot) / Spot
(0.01500 − 0.04000)		(112.99000 − 116.35000) /116.35000
−0.02500	>	−0.02888

Step 3: Arbitrage Process

Description	Rate	Calculation	Result
Calculate foreign equivalent & borrow this amount.	Spot	JPY 58,175,000/ 116.35000 JPY/USD	USD 500,000
Invest Domestic at Domestic interest rate*		JPY 58,175,000 × (1 + 0.01500)	JPY 59,047,625
* This is the amount you will have available to repay the loan.			
Calculate loan payoff (foreign currency)		500,000 USD × (1+0.04000)	USD(520,000)
Calculate payoff in Domestic currency**	Fwd	520,000 USD × 112.99000 JPY/USD	JPY (58,754,800)
**This is the amount you need to repay.			
Calculate Arbitrage Profit		JPY 59,0047,625 −JPY 58,754,800	JPY 292,825

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

9. (B) CAD/GBP 2.2821 – 2.2992.

    Explanation

    USD/GBP(bid) = 1/0.69686 = 1.4350

    USD/GBP(ask) = 1/0.69459 = 1.4397

    CAD/GBP bid quote is 1.4350 x 1.5903 = 2.2821

    CAD/GBP ask quote is 1.4397 x 1.5970 = 2.2992

    (Module 5.1, LOS 5.b)

    Related Material

    SchweserNotes - Book 1

10. (A) negative skewness and positive excess kurtosis.

    Explanation

    FX carry trade return distribution exhibits negative skewness and positive excess kurtosis.

    (Module 5.3, LOS 5.i)

    Related Material

    SchweserNotes - Book 1

11. (A) both are correct.

    Explanation

    UIRP means that interest rates and exchange rates will adjust so the risk adjusted return on assets between any two countries and their associated currencies will be the same. PPP is based on the idea that a given basket of goods should cost the same in different countries after taking into account the changes in exchange rates. PPP does not hold due to transportation costs and other factors.

    (Module 5.2, LOS 5.f)

    Related Material

    SchweserNotes - Book 1

12. (A) USD/NZD 0.55825.

    Explanation

    USD interest rate is 1.5% higher hence, NZD will appreciate by 1.5% under the uncovered interest rate parity.

    Expected Spot = 0.5500 x (1.015)

    = USD/NZD 0.55825

    (Module 5.2, LOS 5.e)

    Related Material

    SchweserNotes - Book 1

13. (B) CAD/EUR 1.3978 – 1.4105.

Explanation

The CAD/EUR bid quote is 1.495 x 0.935 = 1.3978

The CAD/EUR ask quote is 1.5005 x 0.940 = 1.4105

(Module 5.1, LOS 5.b)

Related Material

SchweserNotes - Book 1

14. (A) an expansionary fiscal policy.

Explanation

If Zimbaya follows an expansionary fiscal policy, government borrowing will increase leading to an increase in interest rates. This increase in interest rates will attract capital inflows to Zimbaya, leading to an appreciation of the Z$. Either an expansionary ("loose") monetary policy or a restrictive fiscal policy should lead to lower interest rates and to depreciation of Z$.

(Module 5.3, LOS 5.k)

Related Material

SchweserNotes - Book 1

15. (A) Relative PPP states that prices for goods and services are the same whether it is for one good or for a basket of goods.

Explanation

Relative PPP does not state that prices for goods and services are the same, only that the rate of change in the FX rate is a function of the inflation differentials between the two countries.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

16. (A) discount of $0.0035

Explanation

Premium (discount) = F − S = 0.6925 − 0.696

= −0.0035

(i.e., a discount)

(Module 5.1, LOS 5.a)

Related Material

SchweserNotes - Book 1

17. (A) depreciate.

Explanation

Under the portfolio balance model, as the ratio of government debt to GDP increases over time and the level of government debt becomes unsustainable, the currency of country P should depreciate. (Under the Mundell-Fleming model, country P's currency should appreciate in the short-term as fiscal deficits push interest rates higher, however this question is specifically asking about the long-run effect).

(Module 5.3, LOS 5.k)

Related Material

SchweserNotes - Book 1

18. (A) interest rates.

Explanation

Mundell-Fleming approach focuses on the role of interest rate in exchange rate determination. Mundell-Fleming model does not explicitly take into account the role of inflation.

(Module 5.3, LOS 5.k)

Related Material

SchweserNotes - Book 1

19. (B) Borrow MUR. Arbitrage profits are MUR 13,340.

Explanation

Step 1: Determine whether an arbitrage opportunity exists.

- Using CIRP, $F = S \times (1 + r_{MUR}) / (1 + r_\$) = 30.73(1.065) / (1.052) = 31.11$ which is less than the market forward price of 31.50. Hence, $ is overpriced in forward market.
- We sell $ forward and purchase $ in spot market

Step 2: Borrow/Lend which currency?

- Rule: Lend the currency that you are buying in the spot market and borrow the counter currency.

Step 3: Conduct Arbitrage and Calculate Profits.

Step	Description	Rate	Calculation	Result
(a)	Borrow MUR		MUR 1,000,000	MUR 1,000,000
(b)	Exchange MUR for $	Spot	= MUR 1,000,000 / 30.73000 MUR/$	$32,541
(c)	Lend $ at (U.S.) Rate		=$32,541 x (1.05200)	$34,233
(d)	Contract to sell proceeds fwd[1]	Fwd	=$34,233x 31.50000 MUR/$	MUR 1,078,0340
(e)	Calculate loan payoff[2]		= MUR 1,000,000 × (1.065000)	MUR 1,065,000®
(f)	Calculate profit (d-e)			MUR 13,340

Note: [1] This is the amount you will have available to repay the loan. [2] this is the amount you need to repay.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

20. (C) **Arbitrage is possible here, investors should borrow domestic, lend foreign.**

Explanation

Question 1: Is there an arbitrage opportunity?

If the result of the following formula (derived from rearranging the interest rate parity condition) is not equal to 0, there is an arbitrage opportunity.

$$\left(1 + r_{domestic}\right) - \left[\left(\left(1 + r_{foreign}\right) \times \text{Forward}_{DC/FC}\right)\right) / \text{Spot}_{DC/FC}\right] = ?$$

Here, $(1 + 0.10) - [((1 + 0.12) \times 2.0_{DC/FC})/1.9_{DC/FC}] = (1.10 - 1.18) = -0.08$, which is not equal to 0. **Arbitrage opportunities exist.**

Question 2: Borrow Domestic (local) or Foreign?

Here are some "rules" regarding where to start the arbitrage (where to borrow). These rules only work if there are no transaction costs and only if the currency is quoted in DC/FC terms.

Rule 1: If the sign on the result of question 1 is negative, borrow domestic. If the sign is positive, borrow foreign. Here, the sign is negative, so borrow domestic.

Rule 2:

$\left(r_d - r_f\right)$ < (Forward − Spot) / Spot then Borrow Domestic

$\left(r_d - r_f\right)$ > (Forward − Spot) / Spot then Borrow Foreign

Here, borrow domestic:

$\left(r_d - r_f\right)$ = (0.10 − 0.12) = −0.02 < (Forward − Spot) / Spot

= $(2.0_{DC/FC} - 1.9_{DC/FC})/1.9_{DC/FC}$ = 0.05 − 0.02 < 0.05

Summary: To take advantage of arbitrage opportunities, borrow domestic and lend foreign.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

21. (C) excessively appreciate in the short-term.

Explanation

Dornbusch overshooting model. This model assumes that prices are sticky (inflexible) in the short term and, hence, do not immediately reflect changes in monetary policy.

The model concludes that exchange rates will overshoot the long-run PPP value in the short term. A restrictive monetary policy leads to excessive appreciation of the domestic currency in the short term and then a slow depreciation toward the long-term PPP value.

(Module 5.3, LOS 5.k)

Related Material

SchweserNotes - Book 1

22. (A) Money supply relative to bank reserves shrinks.

Explanation

Warning sign of an impending currency crisis is when money supply relative to bank reserves grows (not shrinks).

(Module 5.3, LOS 5.m)

Related Material

SchweserNotes - Book 1

23. (C) $243.78.

Explanation

The EUR/USD and GBP/USD rates imply that the arbitrage free cross rates for the EUR/GBP are:

bid = €1.000/£2.0100 = €0.4975

ask = €1.0015/£2.0000 = €0.5008

Since the cross rates given (€0.3985 – €0.4000) are outside of the arbitrage-free cross rates, profitable arbitrage is available.

It takes too few euros to buy 1 pound, so we want our arbitrage trades to go in the direction that will cause us to sell overvalued euros for pounds at the ask rate of €0.4000.

Start with $1,000.

Use the $1,000 to buy euros ($1,000 x €1.000/$) = €1,000.

Use the €1,000 to buy sterling (€1,000 / €0.4000/£) = £2,500.

Use the £2,500 to buy dollars (£2,500 / £2.0100/$) = $1,243.78.

(Module 5.1, LOS 5.b)

Related Material

SchweserNotes - Book 1

24. (C) fat tails and a negative skew.

Explanation

The distribution of carry trade returns is characterized by negative skewness and fat tails.

(Module 5.3, LOS 5.i)

Related Material

SchweserNotes - Book 1

25. (B) 4.91.

Explanation

$\text{Forward}_{DC/FC} / \text{Spot}_{DC/FC} = (1 + r_{domestic})/(1 + r_{foreign})\bullet$

$\text{Spot}_{DC/FC} = \text{Forward}_{DC/FC} (1 + r_{foreign})/(1 + r_{domestic})$

= (5.00)(1.07) / (1.09) = 4.908

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

26. (B) appreciate in the short-run and depreciate in the long-run.

Explanation

Under Mundell-Fleming model, a country running expansionary fiscal policy (i.e., running fiscal deficits) would attract foreign capital due to high interest rates and will see its currency appreciate in the short-run. Under the asset market approach, in the long-run sustained deficits will increase the risk of the country's debt and lead to a currency depreciation.

(Module 5.3, LOS 5.k)

Related Material

SchweserNotes - Book 1

27. (C) 1.665 KPW/$.

Explanation

Forward rate (DC/FC) = Spot Rate (DC/FC) x [(1 + domestic rate) / (1 + foreign rate)],

Forward rate = 1 / 1.65 (KPW/$) x (1.09 / 1.10) = 0.60055 $/KPW, or 1.665 KPW/$.

Alternatively, forward rate = 1.65 (KPW/$) x (1.10 / 1.09) = 1.665 (KPW/$).

(Module 5.2, LOS 5.g)

Related Material

SchweserNotes - Book 1

28. (C) flow out of the domestic country.

Explanation

This equation is Interest Rate Parity rearranged! If the term on the left $(1 + r_{Dc})$, is less than the term on the right, it means that the domestic rate is low relative to the hedged foreign rate. Therefore, there is a profitable arbitrage from borrowing the domestic currency and lending at the foreign interest rate. Because we lend in the foreign market, we say that the funds flow out of the domestic economy.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

29. (A) Floating exchange rates

Explanation

Warning sign of an impending currency crisis is when exchange rates are fixed or partially fixed (and not floating).

(Module 5.3, LOS 5.m)

Related Material

SchweserNotes - Book 1

30. (A) $5,985

Explanation

Samuelson is currently long CHF in the forward market. Closing or offsetting that position requires a short forward contract in CHF (i.e., A contract to convert CHF into USD). To calculate the mark-to-market value, we first need to have the forward all-in bid price:

$1.0301 - (16.0/10,000) = 1.0285$.

Mark-to-market value =

$$\frac{(FP_t FP)(\text{contract size})}{\left(1 + R\dfrac{\text{days}}{360}\right)}$$

$$= \frac{(1.0285 - 1.0225)(1,000,000)}{\left(1 + 0.01\left(\dfrac{90}{360}\right)\right)}$$

= $5,985

(Module 5.2, LOS 5.d)

Related Material

SchweserNotes - Book 1

31. (C) CAD 0.010

Explanation

Spread = CAD 1.4350 − 1.4250 = CAD 0.010

(Module 5.1, LOS 5.a)

Related Material

SchweserNotes - Book 1

32. (B) the forward rate is biased estimator of future spot rate.

Explanation

The carry trade is premised on uncovered interest rate parity not holding. When the forward rate is an unbiased predictor of the future spot rate, uncovered interest rate parity will hold and hence the carry trade will not be profitable. When the forward rate is a biased predictor of future spot rate, uncovered interest rate parity will not hold and the carry trade may be profitable.

(Module 5.3, LOS 5.i)

Related Material

SchweserNotes - Book 1

33. (A) premium of 1.0.

Explanation

Base currency (USD in this case) is at a forward premium if the forward rate is above the spot rate. Forward premium = forward rate − spot rate = 5 − 4 = 1.

(Module 5.1, LOS 5.c)

Related Material

SchweserNotes - Book 1

34. (A) uncovered interest-rate parity.

Explanation

Uncovered interest-rate parity is the concept that exchange rates must change so that the return on investments with identical risk will be the same in any currency. Suzaken's statement reflects uncovered interest rate parity. Covered interest rate parity would be applicable if the investor hedges the foreign exchange risk via a forward exchange rate contract.

(Module 5.2, LOS 5.f)

Related Material

SchweserNotes - Book 1

Jennifer Nance has recently been hired as an analyst at the Central City Bank in the currency trading department. Nance, who recently graduated with a degree in economics, will be working with other analysts to determine if there are profit opportunities in the foreign exchange market.

Nance has the following data available:

	U.S. Dollar ($)	U.K. Pound (£)	Euro(€)
Expected inflation rate	6.0%	3.0%	7.0%
One-year nominal interest rate	10.0%	6.0%	9.0%

Market Spot Rates			
	U.S. Dollar ($)	U.K. Pound (£)	Euro(€)
U.S. Dollar ($)	$1.0000	$1.6000	$0.8000
U.K. Pound (£)	0.6250	1.0000	2.0000
Euro (€)	1.2500	0.5000	1.0000

Market 1-year Forward Rates			
	U.S. Dollar ($)	U.K. Pound (£)	Euro(€)
U.S. Dollar ($)	$1.0000	$1.6400	$0.8082
U.K. Pound (E)	0.6098	1.0000	2.0292
Euro (€)	1.2373	0.4928	1.0000

Nance receives a report from Jamshed Banaji, Chief Economist at Central City Bank providing broad U.K. and U.S. macro-economic forecasts. Nance notes that the Bank of England is expected to pursue an expansionary monetary policy while the Federal Reserve monetary policy is expected to be neutral. Also, the British parliament is expected to reduce the budget deficits more aggressively as compared to the U.S.

35. (C) USD/EUR 0.8073.

Explanation

Interest rate parity implies that, in order to prevent covered interest arbitrage, the one-year forward USD/EUR rate should be equal to $0.8000(1.10) / (1.09) = $0.8073.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

36. (B) the projected current account deficit.

Explanation

The adjustment to exchange rates to restore current accounts to a balanced position depends on:

- The level of initial deficit.
- The response of import and export demand to changes in import and export prices.
- The response of import and export prices to changes in the exchange rate.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

37. (A) Pound.

Explanation

Under a carry trade, the funding currency is the lower yielding currency (in this case, the pound with 1-year nominal interest rate of 6% is the best candidate).

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

38. (A) Real exchange rate substantially lower than mean reverting level.

Explanation

One of the warning signs of a currency crisis is that real exchange rate is substantially higher than the mean reverting level.

(Module 5.2, LOS 5.e)

Related Material

SchweserNotes - Book 1

39. (B) prevent appreciation of domestic currency

Explanation

Central bank objectives include prevention of excessive appreciation of domestic currency, reduction of excessive foreign capital inflows and pursuit of independent monetary policy.

(Module 5.3, LOS 5.l)

Related Material

SchweserNotes - Book 1