

PRACTICE PROBLEMS

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The following information relates to Questions 1–5

Ed Smith is a new trainee in the foreign exchange (FX) services department of a major global bank. Smith's focus is to assist senior FX trader, Feliz Mehmet, CFA. Mehmet mentions that an Indian corporate client exporting to the United Kingdom wants to estimate the potential hedging cost for a sale closing in one year. Smith is to determine the premium/discount for an annual (360 day) forward contract using the exchange rate data presented in Exhibit 1.

Exhibit 1 Select Currency Data for GBP and INR

| | |
|------------------------------|---------|
| Spot (INR/GBP) | 79.5093 |
| Annual (360-day) Libor (GBP) | 5.43% |
| Annual (360-day) Libor (INR) | 7.52% |

Mehmet is also looking at two possible trades to determine their profit potential. The first trade involves a possible triangular arbitrage trade using the Swiss, US and Brazilian currencies, to be executed based on a dealer's bid/offer rate quote of 0.5161/0.5163 in CHF/BRL and the interbank spot rate quotes presented in Exhibit 2.

Exhibit 2 Interbank Market Quotes

| Currency Pair | Bid/Offer |
|---------------|---------------|
| CHF/USD | 0.9099/0.9101 |
| BRL/USD | 1.7790/1.7792 |

Mehmet is also considering a carry trade involving the USD and the Euro. He anticipates it will generate a higher return than buying a one-year domestic note at the current market quote due to low US interest rates and his predictions of exchange rates in one year. To help Mehmet assess the carry trade, Smith provides Mehmet with selected current market data and his one year forecasts in Exhibit 3.

Exhibit 3 Spot Rates and Interest Rates for Proposed Carry Trade

| Today's one-year Libor | | Currency pair (Price/Base) | Spot rate today | Projected spot rate in one year |
|------------------------|-------|----------------------------|-----------------|---------------------------------|
| USD | 0.80% | CAD/USD | 1.0055 | 1.0006 |
| CAD | 1.71% | EUR/CAD | 0.7218 | 0.7279 |
| EUR | 2.20% | | | |

Finally, Mehmet asks Smith to assist with a trade involving a US multinational customer operating in Europe and Japan. The customer is a very cost conscious industrial company with a AA credit rating and strives to execute its currency trades at the most favorable bid/offer spread. Because its Japanese subsidiary is about to close on a major European acquisition in three business days, the client wants to lock in a trade involving the Japanese yen and the Euro as early as possible the next morning, preferably by 8:05 AM New York time.

At lunch, Smith and other FX trainees discuss how best to analyze currency market volatility from ongoing financial crises. The group agrees that a theoretical explanation of exchange rate movements, such as the framework of the international parity conditions, should be applicable across all trading environments. They note such analysis should enable traders to anticipate future spot exchange rates. But they disagree on which parity condition best predicts exchange rates, voicing several different assessments. Smith concludes the discussion on parity conditions by stating to the trainees:

"I believe that in the current environment both covered and uncovered interest rate parity conditions are in effect."

- Based upon Exhibit 1, the forward premium (discount) for a 360-day INR/GBP forward contract is *closest* to:
 - 1.546.
 - 1.546.
 - 1.576.
- Based on Exhibit 2, the *most* appropriate recommendation regarding the triangular arbitrage trade is to:
 - decline the trade, no arbitrage profits are possible.
 - execute the trade, buy BRL in the interbank market and sell it to the dealer.
 - execute the trade, buy BRL from the dealer and sell it in the interbank market.
- Based on Exhibit 3, the potential all-in USD return on the carry trade is *closest* to:
 - 1.04%.
 - 1.40%.
 - 1.84%.
- The factor *least likely* to lead to a narrow bid/offer spread for the industrial company's needed currency trade is the:
 - timing of its trade.
 - company's credit rating.
 - pair of currencies involved.
- If Smith's statement on parity conditions is correct, future spot exchange rates are *most likely* to be forecast by:

- A current spot rates.
- B forward exchange rates.
- C inflation rate differentials.

The following information relates to Questions 6–12

Connor Wagener, a student at the University of Canterbury in New Zealand, has been asked to prepare a presentation on foreign exchange rates for his International Business course. Wagener has a basic understanding of exchange rates, but would like a practitioner's perspective, and he has arranged an interview with currency trader Hannah McFadden. During the interview, Wagener asks McFadden:

“Could you explain what drives exchange rates? I’m curious as to why our New Zealand dollar was affected by the European debt crisis in 2011 and what other factors impact it.”

In response, McFadden begins with a general discussion of exchange rates. She notes that international parity conditions illustrate how exchange rates are linked to expected inflation, interest rate differences, and forward exchange rates as well as current and expected future spot rates. McFadden states:

Statement 1 “Fortunately, the international parity condition most relevant for FX carry trades does not always hold.”

McFadden continues her discussion:

“FX carry traders go long (i.e. buy) high-yield currencies and fund their position by shorting, that is borrowing in, low-yield currencies. Unfortunately, crashes in currency values can occur which create financial crises as traders unwind their positions. For example, in 2008, the New Zealand dollar was negatively impacted when highly leveraged carry trades were unwound. In addition to investors, consumers and business owners can also affect currency exchange rates through their impact on their country’s balance of payments. For example, if New Zealand consumers purchase more goods from China than New Zealand businesses sell to China, New Zealand will run a trade account deficit with China.”

McFadden further explains:

Statement 2 “A trade surplus will tend to cause the currency of the country in surplus to appreciate while a deficit will cause currency depreciation. Exchange rate changes will result in immediate adjustments in the prices of traded goods as well as in the demand for imports and exports. These changes will immediately correct the trade imbalance.”

McFadden next addresses the influence of monetary and fiscal policy on exchange rates:

“Countries also exert significant influence on exchange rates through both the initial mix of their fiscal and monetary policies, and also by subsequent adjustments to those policies. Various models have been developed to

identify how these policies affect exchange rates. The Mundell-Fleming model addresses how changes in both fiscal and monetary policies affect interest rates and ultimately exchange rates in the short-term.”

McFadden describes monetary models by stating:

Statement 3 “Monetary models of exchange rate determination focus on the effects of inflation, price level changes, and risk premium adjustments.”

McFadden continues her discussion:

“So far, we’ve touched on balance of payments and monetary policy. The portfolio-balance model addresses the impacts of sustained fiscal policy on exchange rates. I must take a client call, but will return shortly. In the meantime, here is some relevant literature on the models I mentioned along with a couple of questions for you to consider:

- Question 1 Assume an emerging market (EM) country has restrictive monetary and fiscal policies under low capital mobility conditions. Are these policies likely to lead to currency appreciation, currency depreciation, or to have no impact?
- Question 2 Assume a developed market (DM) country has an expansive fiscal policy under high capital mobility conditions. Why is its currency most likely to depreciate in the long-run under an integrated Mundell-Fleming and portfolio-balance approach?”

Upon her return, Wagener and McFadden review the questions. McFadden notes that capital flows can have a significant impact on exchange rates and have contributed to currency crises in both EM and DM countries. She explains that central banks, like the Reserve Bank of New Zealand, use FX market intervention as a tool to manage exchange rates. McFadden states:

Statement 4 “Some studies have found that EM central banks tend to be more effective in using exchange rate intervention than DM central banks, primarily because of one important factor.”

McFadden continues her discussion:

- Statement 5 “I mentioned that capital inflows could cause a currency crisis, leaving fund managers with significant losses. In the period leading up to a currency crisis, I would predict that an affected country’s:
- Prediction 1 foreign exchange reserves will increase.
- Prediction 2 broad money growth will increase.
- Prediction 3 the exchange rate will be substantially higher than its mean level during tranquil periods.

After the interview, McFadden agrees to meet the following week to discuss more recent events on the New Zealand dollar.

- 6 The international parity condition McFadden is referring to in Statement 1 is:
- A purchasing power parity.
 - B covered interest rate parity.
 - C uncovered interest rate parity.

- 7 In Statement 2, McFadden is *most likely* failing to consider the:
 - A initial gap between the country's imports and exports.
 - B effect of an initial trade deficit on a countries' exchange rates.
 - C lag in the response of import and export demand to price changes.
 - 8 The *least* appropriate factor used to describe the type of models mentioned in Statement 3 is:
 - A inflation.
 - B price level changes.
 - C risk premium adjustments.
 - 9 The best response to Question 1 is that the policies will:
 - A have no impact.
 - B lead to currency appreciation.
 - C lead to currency depreciation.
 - 10 The most likely response to Question 2 is a(n):
 - A increase in the price level.
 - B decrease in risk premiums.
 - C increase in government debt.
 - 11 The factor that McFadden is *most likely* referring to in Statement 4 is:
 - A FX reserve levels.
 - B domestic demand.
 - C the level of capital flows.
 - 12 Which of McFadden's predictions in Statement 5 is *least likely to be correct*?
 - A Prediction 1
 - B Prediction 2
 - C Prediction 3
-

The following information relates to Question 13–20

Anna Goldsworthy is the chief financial officer of a manufacturing firm headquartered in the United Kingdom. She is responsible for overseeing exposure to price risk in both the commodity and currency markets. Goldsworthy is settling her end-of-quarter transactions and creating reports. Her intern, Scott Underwood, assists her in this process.

The firm hedges input costs using forward contracts that are priced in US dollars (USD) and Mexican pesos (MXN). Processed goods are packaged for sale under licensing agreements with firms in foreign markets. Goldsworthy is expecting to receive a customer payment of JPY 225,000,000 (Japanese yen) that she wants to convert to pounds sterling (GBP). Underwood gathers the exchange rates from Dealer A in Exhibit 1.

Exhibit 1 Dealer A's Spot Exchange Rates

| Currency Pair (Price/Base) | Spot Exchange Rates | | |
|----------------------------|---------------------|--------|----------|
| | Bid | Offer | Midpoint |
| JPY/GBP | 187.39 | 187.43 | 187.41 |
| MXN/USD | 17.147 | 17.330 | 17.239 |
| GBP/EUR | 0.7342 | 0.7344 | 0.7343 |
| USD/EUR | 1.1572 | 1.1576 | 1.1574 |
| USD/GBP | 1.5762 | 1.5766 | 1.5764 |

The firm must also buy USD to pay a major supplier. Goldsworthy calls Dealer A with specific details of the transaction and asks to verify the USD/GBP quote. Dealer A calls her back later with a revised USD/GBP bid/offer quote of 1.5760/1.5768.

Goldsworthy must purchase MXN 27,000,000 to pay an invoice at the end of the quarter. In addition to the quotes from Dealer A, Underwood contacts Dealer B, who provides a bid/offer price of GBP/MXN 0.0366/0.0372. To check whether the dealer quotes are reflective of an efficient market, Underwood examines whether the prices allow for an arbitrage profit.

In three months, the firm will receive EUR 5,000,000 (euros) from another customer. Six months ago, the firm sold EUR 5,000,000 against the GBP using a nine-month forward contract at an all-in price of GBP/EUR 0.7400. To mark the position to market, Underwood collects the GBP/EUR forward rates in Exhibit 2.

Exhibit 2 GBP/EUR Forward Rates

| Maturity | Forward Points |
|--------------|----------------|
| One month | 4.40/4.55 |
| Three months | 14.0/15.0 |
| Six months | 29.0/30.0 |

Goldsworthy also asks for the current 90-day Libors for the major currencies. Selected three-month Libors (annualized) are shown in Exhibit 3. Goldsworthy studies Exhibit 3 and says, "We have the spot rate and the 90-day forward rate for GBP/EUR. As long as we have the GBP 90-day Libor, we will be able to calculate the implied EUR 90-day Libor."

Exhibit 3 90-Day Libor

| Currency | Annualized Rate |
|----------|-----------------|
| GBP | 0.5800% |
| JPY | 0.0893% |
| USD | 0.3300% |

After reading a draft report, Underwood notes, “We do not hedge the incoming Japanese yen cash flow. Your report asks for a forecast of the JPY/GBP exchange rate in 90 days. We know the JPY/GBP spot exchange rate.” He asks, “Does the information we have collected tell us what the JPY/GBP exchange rate will be in 90 days?”

Goldsworthy replies, “The JPY/GBP exchange rate in 90 days would be a valuable piece of information to know. An international parity condition can be used to provide an estimate of the future spot rate.”

- 13 Using the quotes in Exhibit 1, the amount received by Goldsworthy from converting JPY 225,000,000 will be *closest* to:
 - A GBP 1,200,448.
 - B GBP 1,200,576.
 - C GBP 1,200,704.
- 14 Using Exhibit 1, which of the following would be the *best* reason for the revised USD/GBP dealer quote of 1.5760/1.5768?
 - A A request for a much larger transaction
 - B A drop in volatility in the USD/GBP market
 - C A request to trade when both New York and London trading centers are opened
- 15 Using the quotes from Dealer A and B, the triangular arbitrage profit on a transaction of MXN 27,000,000 would be *closest* to:
 - A GBP 0.
 - B GBP 5,400.
 - C GBP 10,800.
- 16 Based on Exhibits 1, 2, and 3, the mark-to-market gain for Goldsworthy’s forward position is *closest* to:
 - A GBP 20,470.
 - B GBP 20,500.
 - C GBP 21,968.
- 17 Based on Exhibit 2, Underwood should conclude that three-month EUR Libor is:
 - A below three-month GBP Libor.
 - B equal to three-month GBP Libor.
 - C above three-month GBP Libor.
- 18 Based on the exchange rate midpoint in Exhibit 1 and the rates in Exhibit 3, the 90-day forward premium (discount) for the USD/GBP would be *closest* to:
 - A -0.0040.
 - B -0.0010.
 - C +0.0010.
- 19 Using Exhibits 1, 2, and 3, which international parity condition would Goldsworthy *most likely* use to calculate the EUR Libor?
 - A Real interest rate parity
 - B Covered interest rate parity
 - C Uncovered interest rate parity
- 20 The international parity condition Goldsworthy will use to provide the estimate of the future JPY/GBP spot rate is *most likely*:
 - A covered interest rate parity.

- B** uncovered interest rate parity.
- C** relative purchasing power parity.

SOLUTIONS

- 1 C is correct. The equation to calculate the forward premium (discount) is:

$$F_{f/d} - S_{f/d} = S_{f/d} \left(\frac{\left[\frac{\text{Actual}}{360} \right]}{1 + i_d \left[\frac{\text{Actual}}{360} \right]} \right) (i_f - i_d)$$

$S_{f/d}$ is the spot rate with GBP the base currency or d , and INR the foreign currency or f . $S_{f/d}$ per Exhibit 1 is 79.5093, i_f is equal to 7.52% and i_d is equal to 5.43%.

With GBP as the base currency (i.e. the “domestic” currency) in the INR/GBP quote, substituting in the relevant base currency values from Exhibit 1 yields the following:

$$F_{f/d} - S_{f/d} = 79.5093 \left(\frac{\left[\frac{360}{360} \right]}{1 + 0.0543 \left[\frac{360}{360} \right]} \right) (0.0752 - 0.0543)$$

$$F_{f/d} - S_{f/d} = 79.5093 \left(\frac{1}{1.0543} \right) (0.0752 - 0.0543)$$

$$F_{f/d} - S_{f/d} = 1.576$$

- 2 B is correct. The dealer is posting a bid rate to buy BRL at a price that is too high. This overpricing is determined by calculating the interbank implied cross rate for the CHF/BRL using the intuitive equation-based approach:

$$\text{CHF/BRL} = \text{CHF/USD} \times (\text{BRL/USD})^{-1}, \text{ or}$$

$$\text{CHF/BRL} = \text{CHF/USD} \times \text{USD/BRL}$$

Inverting the BRL/USD given quotes in Exhibit 2 determines the USD/BRL bid/offer rates of 0.56205/0.56211 (The bid of 0.56205 is the inverse of the BRL/USD offer, calculated as $1/1.7792$; the offer of 0.56211 is the inverse of the BRL/USD bid, calculated as $1/1.7790$). Multiplying the CHF/USD and USD/BRL bid/offer rates then leads to the interbank implied CHF/BRL cross rate of:

$$\text{Bid: } 0.9099 \times 0.56205 = 0.5114$$

$$\text{Offer: } 0.9101 \times 0.56211 = 0.5116$$

Since the dealer is willing to buy BRL at 0.5161 but BRL can be purchased from the interbank market at 0.5116, so there is an arbitrage opportunity to buy BRL in the interbank market and sell them to the dealer for a profit of 0.0045 CHF ($0.5161 - 0.5116$) per BRL transacted.

- 3 A is correct. The carry trade involves borrowing in a lower yielding currency to invest in a higher yielding one and netting any profit after allowing for borrowing costs and exchange rate movements. The relevant trade is to borrow USD and lend in Euros. To calculate the all-in USD return from a one-year EUR Libor deposit, first determine the current and one-year later USD/EUR exchange rates. Because one USD buys CAD 1.0055 today, and one CAD buys EUR 0.7218 today, today's EUR/USD rate is the product of these two numbers:

$1.0055 \times 0.7218 = 0.7258$. The projected rate one year later is: $1.0006 \times 0.7279 = 0.7283$. Accordingly, measured in dollars, the investment return for the unhedged EUR Libor deposit is equal to:

$$(1.0055 \times 0.7218) \times (1 + 0.022) \times [1/(1.0006 \times 0.7279)] - 1 \\ = 0.7258 \times (1.022)(1/0.7283) - 1 = 1.0184 - 1 = 1.84\%$$

However, the borrowing costs must be charged against this *gross* return to fund the carry trade investment (one-year USD Libor was 0.80%). The *net* return on the carry trade is thereby closest to: $1.84\% - 0.80\% = 1.04\%$.

- 4 B is correct. While credit ratings can affect spreads, the trade involves spot settlement, i.e. two business days after the trade date, so the spread quoted to this highly rated (AA) firm is not likely to be much tighter than the spread that would be quoted to a somewhat lower rated (but still high quality) firm. The relationship between the bank and client, the size of the trade, the time of day the trade is initiated, the currencies involved and the level of market volatility are likely to be more significant factors in determining the spread for this trade.
- 5 B is correct. By rearranging the terms of the equation defining covered interest rate parity, and assuming that uncovered interest rate parity is in effect, the forward exchange rate is equal to the expected future spot exchange rate, $F_{f/d} = S_{f/d}^e$, with the expected percentage change in the spot rate equal to the interest rate differential. Thus, the forward exchange rate is an unbiased forecast of the future spot exchange rate.
- 6 C is correct. The carry trade strategy is dependent upon the fact that uncovered interest rate parity does not hold in the short or medium term. If uncovered interest rate parity held, it would mean that investors would receive identical returns from either an unhedged foreign currency investment or a domestic currency investment because the appreciation/depreciation of the exchange rate would offset the yield differential. However, during periods of low volatility, evidence shows that high yield currencies do not depreciate enough and low yield currencies do not appreciate enough to offset the yield differential.
- 7 C is correct. McFadden states that exchange rates will *immediately* correct the trade imbalance. She is describing the Flow Supply/Demand Channel, which assumes that trade imbalances will be corrected as the deficit country's currency depreciates, causing its exports to become more competitive and its imports to become more expensive. Studies indicate that there can be long lags between exchange rate changes, changes in the prices of traded goods and changes in the trade balance. In the short-run, exchange rates tend to be more responsive to investment and financing decisions.
- 8 C is correct. Risk premiums are more closely associated with the portfolio-balance approach. The portfolio balance approach addresses the impact of a country's net foreign asset/liability position. Under the portfolio balance approach, investors are assumed to hold a diversified portfolio of assets including foreign and domestic bonds. Investors will hold a country's bonds as long as they are compensated appropriately. Compensation may come in the form of higher interest rates and/or higher risk premiums.
- 9 B is correct. The currency is likely to appreciate. The emerging market country has both a restrictive monetary policy and restrictive fiscal policy under conditions of low capital mobility. Low capital mobility indicates that interest rate changes induced by monetary and fiscal policy will not cause large changes in capital flows. Implementation of restrictive policies should result in an improvement in the trade balance, which will result in currency appreciation.

- 10 C is correct. Expansionary fiscal policies result in currency depreciation in the long run. Under a portfolio-balance approach, the assumption is that investors hold a mix of domestic and foreign assets including bonds. Fiscal stimulus policies result in budget deficits which are often financed by debt. As the debt level rises, investors become concerned as to how the on-going deficit will be financed. The country's central bank may need to create more money in order to purchase the debt which would cause the currency to depreciate. Or, the government could adopt a more restrictive fiscal policy, which would also depreciate the currency.
- 11 A is correct. EM countries are better able to influence their exchange rates because their reserve levels as a ratio to average daily FX turnover are generally much greater than those of DM countries. This means that EM central banks are in a better position to affect currency supply and demand than DM countries where the ratio is negligible. EM policymakers use their foreign exchange reserves as a kind of insurance to defend their currencies, as needed.
- 12 A is correct. Prediction 1 is least likely to be correct. Foreign exchange reserves tend to decline precipitously, not increase, as a currency crisis approaches. Broad money growth tends to rise in the period leading up to a currency crisis and the exchange rate is substantially higher than its mean level during tranquil periods.
- 13 A is correct. Goldsworthy has been given a bid–offer spread. Because she is buying the base currency—in this case, GBP—she must pay the offer price of JPY 187.43 per GBP.

$$\frac{\text{JPY } 225,000,000}{187.43 \text{ JPY/GBP}} = \text{GBP } 1,200,448$$

- 14 A is correct. Posted quotes are typically for transactions in 1 million units of the base currency. Larger transactions may be harder for the dealer to sell in the interbank market and would likely require the dealer to quote a wider spread (lower bid price and higher offer price).
- 15 A is correct. Using quotes from Dealer A, she can find

$$\frac{\text{MXN}}{\text{GBP}} = \frac{\text{MXN}}{\text{USD}} \times \frac{\text{USD}}{\text{GBP}}$$

The bid from Dealer A for MXN/GBP is effectively

$$\begin{aligned} \left(\frac{\text{MXN}}{\text{GBP}} \right)_{\text{bid}} &= \left(\frac{\text{MXN}}{\text{USD}} \right)_{\text{bid}} \times \left(\frac{\text{USD}}{\text{GBP}} \right)_{\text{bid}} \\ &= 17.147 \times 1.5762 = 27.0271 \end{aligned}$$

The offer from Dealer A is

$$\begin{aligned} \left(\frac{\text{MXN}}{\text{GBP}} \right)_{\text{offer}} &= \left(\frac{\text{MXN}}{\text{USD}} \right)_{\text{offer}} \times \left(\frac{\text{USD}}{\text{GBP}} \right)_{\text{offer}} \\ &= 17.330 \times 1.5766 = 27.3225 \end{aligned}$$

To compare with Dealer B's quote, she must take the inverse of MXN/GBP, so that she has an offer to sell MXN at a rate of $1/27.0271 = \text{GBP } 0.0370$ and a bid to purchase MXN at a rate of $1/27.3225 = \text{GBP } 0.0366$. Dealer A is effectively quoting MXN/GBP at $0.0366/0.0370$. Although she can effectively buy pesos more cheaply from Dealer A (GBP 0.0370 from Dealer A, versus GBP 0.0372 from Dealer B), she cannot resell them to Dealer B for a higher price than GBP 0.0366. There is no profit from triangular arbitrage.

- 16 A is correct. Marking her nine-month contract to market six months later requires buying GBP/EUR three months forward. The GBP/EUR spot rate is 0.7342/0.7344, and the three-month forward points are 14.0/15.0. The three-month forward rate to use is $0.7344 + (15/10000) = 0.7359$. Goldsworthy sold EUR 5,000,000 at 0.7400 and bought at 0.7359. The net cash flow at the settlement date will equal $\text{EUR } 5,000,000 \times (0.7400 - 0.7359) \text{ GBP/EUR} = \text{GBP } 20,500$. This cash flow will occur in three months, so we discount at the three-month GBP Libor rate of 58 bps:

$$\frac{\text{GBP } 20,500}{1 + 0.0058 \left[\frac{90}{360} \right]} = \text{GBP } 20,470.32$$

- 17 A is correct. The positive forward points for the GBP/EUR pair shown in Exhibit 2 indicates that the EUR trades at a forward premium at all maturities, including three months. Covered interest rate parity

$$F_{f/d} = S_{f/d} \left(\frac{1 + i_f \left[\frac{\text{Actual}}{360} \right]}{1 + i_d \left[\frac{\text{Actual}}{360} \right]} \right)$$

suggests a forward rate greater than the spot rate requires a non-domestic risk-free rate (in this case, the GBP Libor) greater than the domestic risk-free rate (EUR Libor). When covered interest rate parity is violated, traders can step in and conduct arbitrage.

- 18 B is correct. Using covered interest rate parity, the forward rate is

$$\begin{aligned} F_{f/d} &= S_{f/d} \left(\frac{1 + i_f \left[\frac{\text{Actual}}{360} \right]}{1 + i_d \left[\frac{\text{Actual}}{360} \right]} \right) \\ &= 1.5764 \left(\frac{1 + 0.0033 \left[\frac{90}{360} \right]}{1 + 0.0058 \left[\frac{90}{360} \right]} \right) = 1.5754 \end{aligned}$$

Because the domestic rate (Libor) is higher than the non-domestic rate, the forward rate will be less than the spot, giving a forward discount of

$$F_{f/d} - S_{f/d} = 1.5754 - 1.5764 = -0.0010$$

- 19 B is correct. The covered interest rate parity condition

$$F_{f/d} = S_{f/d} \left(\frac{1 + i_f \left[\frac{\text{Actual}}{360} \right]}{1 + i_d \left[\frac{\text{Actual}}{360} \right]} \right) \quad (\text{Equation 1})$$

specifies the forward exchange rate that must hold to prevent arbitrage given the spot exchange rate and the risk-free rates in both countries. If the forward and spot exchange rates are known, as well as one of the risk-free rates, the other risk-free rate can be calculated.

20 B is correct. According to uncovered interest rate parity

$$\% \Delta S_{f/d}^e = i_f - i_d \quad (\text{Equation 2})$$

the expected change in the spot exchange rate should reflect the interest rate spread between the two countries, which can be found in Exhibit 3. Given the spot exchange rate (from Exhibit 1) and the expected future change, she should be able to estimate the future spot exchange rate.

PRACTICE PROBLEMS

The following information refers to Questions 1–6

Hans Schmidt, CFA, is a portfolio manager with a boutique investment firm that specializes in sovereign credit analysis. Schmidt's supervisor asks him to develop estimates for GDP growth for three countries. Information on the three countries is provided in Exhibit 1.

Exhibit 1 Select Economic Data for Countries A, B, and C

| Country | Economy | Capital per Worker |
|---------|------------|--------------------|
| A | Developed | High |
| B | Developed | High |
| C | Developing | Low |

After gathering additional data on the three countries, Schmidt shares his findings with colleague, Sean O'Leary. After reviewing the data, O'Leary notes the following observations:

- Observation 1 The stock market of Country A has appreciated considerably over the past several years. Also, the ratio of corporate profits to GDP for Country A has been trending upward over the past several years and is now well above its historical average.
- Observation 2 The government of Country C is working hard to bridge the gap between its standard of living and that of developed countries. Currently, the rate of potential GDP growth in Country C is high.

Schmidt knows that a large part of the analysis of sovereign credit is to develop a thorough understanding of what the potential GDP growth rate is for a particular country and the region in which the country is located. Schmidt is also doing research on Country D for a client of the firm. Selected economic facts on Country D are provided in Exhibit 2.

Exhibit 2 Select Economic Facts for Country D

- Slow GDP Growth
- Abundant Natural Resources
- Developed Economic Institutions

Prior to wrapping up his research, Schmidt schedules a final meeting with O'Leary to see if he can provide any other pertinent information. O'Leary makes the following statements to Schmidt:

- Statement 1 Many countries that have the same population growth rate, savings rate, and production function will have growth rates that converge over time.
- Statement 2 Convergence between countries can occur more quickly if economies are open and there is free trade and international borrowing and lending; however, there is no permanent increase in the rate of growth in an economy from a more open trade policy.

- 1 Based upon Exhibit 1, the factor that would *most likely* have the greatest positive impact on the per capita GDP growth of Country A is:
 - A free trade.
 - B technology.
 - C saving and investment.
 - 2 Based upon Observation 1, in the long run the ratio of profits to GDP in Country A is *most likely* to:
 - A remain near its current level.
 - B increase from its current level.
 - C decrease from its current level.
 - 3 Based upon Observation 2, Country C is *most likely* to have:
 - A relatively low real asset returns.
 - B a relatively low real interest rate.
 - C a relatively high real interest rate.
 - 4 Based upon Exhibit 2, the *least likely* reason for the current pace of GDP growth in Country D is:
 - A a persistently strong currency.
 - B strong manufacturing exports.
 - C strong natural resource exports.
 - 5 The type of convergence described by O'Leary in Statement 1 is *best* described as:
 - A club convergence.
 - B absolute convergence.
 - C conditional convergence.
 - 6 Which of the following growth models is *most* consistent with O'Leary's Statement 2?
 - A Classical
 - B Endogenous
 - C Neoclassical
-

The following information relates to Questions 7–15

Victor Klymchuk, the chief economist at ECONO Consulting (EC), is reviewing the long-term GDP growth of three countries. Klymchuk is interested in forecasting the long-term change in stock market value for each country. Exhibit 1 presents current country characteristics and historical information on selected economic variables for the three countries.

Exhibit 1 Select Country Factors and Historical Economic Data

| | | 2000–2010 | | | |
|------------------|---|-------------------------------------|---|-------------------------|-------------------------|
| Country Factors | | Growth in Hours Worked (%) | Growth in Labor Productivity (%) | Growth in TFP (%) | Growth in GDP (%) |
| Country A | ■ High level of savings and investment | | | | |
| | ■ Highly educated workforce | | | | |
| | ■ Low tariffs on foreign imports | | | | |
| | ■ Limited natural resources | 0.9 | 2.4 | 0.6 | 3.3 |
| Country B | ■ Developed financial markets | | | | |
| | ■ Moderate levels of disposable income | | | | |
| | ■ Significant foreign direct and indirect investments | | | | |
| | ■ Significant natural resources | −0.3 | 1.6 | 0.8 | 1.3 |
| Country C | ■ Politically unstable | | | | |
| | ■ Limited property rights | | | | |
| | ■ Poor public education and health | | | | |
| | ■ Significant natural resources | 1.8 | 0.8 | −0.3 | 2.6 |

Klymchuk instructs an associate economist at EC to assist him in forecasting the change in stock market value for each country. Klymchuk reminds the associate:

Statement 1 “Over short time horizons, percentage changes in GDP, the ratio of earnings to GDP, and the price-to-earnings ratio are important factors for describing the relationship between economic growth and stock prices. However, I am interested in a long-term stock market forecast.”

A client is considering investing in the sovereign debt of Country A and Country B and asks Klymchuk his opinion of each country's credit risk. Klymchuk tells the client:

Statement 2 "Over the next 10 years, I forecast higher potential GDP growth for Country A and lower potential GDP growth for Country B. The capital per worker is similar and very high for both countries, but per capita output is greater for Country A."

The client tells Klymchuk that Country A will offer 50-year bonds and that he believes the bonds could be a good long-term investment given the higher potential GDP growth. Klymchuk responds to the client by saying:

Statement 3 After the next 10 years, I think the sustainable rate of economic growth for Country A will be affected by a growing share of its population over the age of 65, a declining percentage under age 16, and minimal immigration."

The client is surprised to learn that Country C, a wealthy, oil-rich country with significant reserves, is experiencing sluggish economic growth and asks Klymchuk for an explanation. Klymchuk responds by stating:

Statement 4 "While countries with access to natural resources are often wealthier, the relationship between resource abundance and economic growth is not clear. My analysis shows that the presence of a dominant natural resource (oil) in Country C is constraining growth. Interestingly, Country A has few natural resources, but is experiencing a strong rate of increase in per capita GDP growth."

Klymchuk knows that growth in per capita income cannot be sustained by pure capital deepening. He asks the associate economist to determine how important capital deepening is as a source of economic growth for each country. Klymchuk instructs the associate to use the data provided in Exhibit 1.

Klymchuk and his associate debate the concept of convergence. The associate economist believes that developing countries, irrespective of their particular characteristics, will eventually equal developed countries in per capita output. Klymchuk responds as follows:

Statement 5 "Poor countries will only converge to the income levels of the richest countries if they make appropriate institutional changes."

- 7 Based upon the country factors provided in Exhibit 1, the country *most likely* to be considered a developing country is:
 - A Country A.
 - B Country B.
 - C Country C.
- 8 Based upon Exhibit 1, capital deepening as a source of growth was *most* important for:
 - A Country A.
 - B Country B.
 - C Country C.
- 9 Based upon Statement 1, over the requested forecast horizon, the factor that will *most likely* drive stock market performance is the percentage change in:
 - A GDP.
 - B the earnings to GDP ratio.

- C the price-to-earnings ratio.
- 10 Based solely on the predictions in Statement 2, over the next decade Country B's sovereign credit risk will *most likely*:
- A increase.
 - B decrease.
 - C not change.
- 11 Based upon Statement 2, the difference in per capita output between Country A and Country B is *most likely* due to differences in:
- A capital deepening.
 - B capital per worker.
 - C total factor productivity.
- 12 Based upon Statement 3, after the next 10 years the growth rate of potential GDP for Country A will *most likely* be:
- A lower.
 - B higher.
 - C unchanged.
- 13 Based upon Statement 4 and Exhibit 1, the sluggish economic growth in Country C is *least likely* to be explained by:
- A limited labor force growth.
 - B export driven currency appreciation.
 - C poorly developed economic institutions.
- 14 Based upon Statement 4, the higher rate of per capita income growth in Country A is *least likely* explained by the:
- A rate of investment.
 - B growth of its population.
 - C application of information technology.
- 15 The type of convergence described by Klymchuk in Statement 5 is *best* described as:
- A club convergence.
 - B absolute convergence.
 - C conditional convergence.
-

The following information relates to Questions 16–21

At a recent international finance and economics conference in Bamako, Mali, Jose Amaral of Brazil and Lucinda Mantri of India are discussing how to spur their countries' economic growth. Amaral believes that growth can be bolstered by removing institutional impediments and suggests several possibilities for Brazil: launching a rural literacy program, clarifying property rights laws, and implementing a new dividend tax on foreign investors.

Mantri responds that for India capital deepening will be more effective and has proposed the following ideas: building a group of auto and textile factories in the southern states, developing a north–south and east–west highway network, and sponsoring a patent initiative.

In response, Amaral says to Mantri:

“Based on endogenous growth theory, one of those proposals is more likely to raise total factor productivity than result in pure capital deepening.”

While Mantri recognizes that India lacks the significant natural resources of Brazil, she states that India can overcome this challenge by bolstering long-term growth through three channels:

- Channel 1 Deepening the capital base
- Channel 2 Making investments in technology
- Channel 3 Maintaining a low Rupee exchange rate

Each country’s basic economic statistics were presented at the conference. Selected data for Brazil and India are presented in Exhibit 1. Adama Kanté, a fund manager based in Mali, is planning to increase the fund’s allocation to international equities, and after some preliminary analysis, has determined the new allocation will be to Brazilian or Indian equities. After reviewing the data in Exhibit 1, Kanté decides that the allocation will be to Indian equities.

Exhibit 1 Economic Statistics, Brazil and India

| Economic Statistic | Brazil | India |
|--|---------------|--------------|
| GDP/capita, 2010 | \$9,589 | \$3,575 |
| GDP/capita Growth, 1990–2010 | 1.62% | 4.84% |
| GDP Growth, 2005–2008 | 4.9% | 8.2% |
| - Growth due to Labor Productivity Component | 2.9% | 6.0% |
| - Growth due to Capital Deepening Component | 3.4% | 3.6% |

Kanté is concerned about the low standard of living in Mali and its large informal sector. To improve per capita GDP, Kanté is considering five specific strategies:

- Strategy 1 Lower the country’s tax rate.
- Strategy 2 Introduce policies that encourage the return of highly-educated Malian emigrants.
- Strategy 3 Build day care centers to permit greater participation of women in the workforce.
- Strategy 4 Impose high tariffs on imports to protect the country’s nascent industries.
- Strategy 5 Use economic development bank loans to improve the country’s transport and manufacturing infrastructure.

- 16** Which of Amaral’s initiatives is *least likely* to achieve his stated growth objective?
- A** Dividend tax
 - B** Rural literacy
 - C** Property rights

- 17 Which proposal for India is Amaral *most likely* referring to in his response to Mantri?
- A Patent initiative
 - B Highway network
 - C Auto and textile factories
- 18 The channel that is *least likely* to help India overcome its challenge of lacking significant natural resources is:
- A Channel 1.
 - B Channel 2.
 - C Channel 3.
- 19 Based upon Exhibit 1, which Indian economic statistic *least likely* supports Kanté's international equity allocation preference?
- A GDP per capita
 - B Growth due to labor productivity
 - C Growth due to capital deepening
- 20 The strategy that is *least likely* to improve per capita GDP in Mali is:
- A Strategy 1.
 - B Strategy 2.
 - C Strategy 3.
- 21 Which of the following strategies being considered by Kanté is *most likely* to undermine or delay convergence with developed economies?
- A Strategy 2
 - B Strategy 4
 - C Strategy 5
-

SOLUTIONS

- 1 B is correct. Country A is a developed country with a high level of capital per worker. Technological progress and/or more intensive use of existing technology can help developed countries increase productivity and thereby increase per capita GDP. Most developed countries have reasonably low trade barriers; thus, somewhat freer trade is likely to have only an incremental, and probably transitory, impact on per capita GDP growth. Also, since the country already has a high capital-to-labor ratio, increased saving/investment is unlikely to increase the growth rate substantially unless it embodies improved technology.
- 2 C is correct. The ratio of profits to GDP for Country A has been trending upward over the past several years, and is now well above its historical average. The ratio of profits to GDP cannot rise forever. At some point stagnant labor income would make workers unwilling to work without an increase in wages and would also undermine demand, making further expansion of profit margins unsustainable. Thus, it is likely that the ratio of profits to GDP will decline in the long run toward its historical average.
- 3 C is correct. A high growth rate of potential GDP would cause real incomes to rise more rapidly and also translate into higher real interest rates and higher expected/required real asset returns. The real interest rate is essentially the real return that consumers/savers demand in exchange for postponing consumption. Faster growth in potential GDP means that consumers expect their real income to rise more rapidly. This implies that an extra unit of future income/consumption is less valuable than it would be if income were expected to grow more slowly. All else the same, the real interest rate will have to be relatively high in order to induce the savings required to fund required/desired capital accumulation.
- 4 B is correct. Country D is a country with abundant resources and has developed the economic institutions necessary for growth, yet the country is experiencing slow economic growth. It is likely that Country D is experiencing the Dutch Disease, where currency appreciation driven by strong export demand for natural resources makes other segments of the economy, in particular manufacturing, globally uncompetitive. Strong manufacturing exports would indicate that Country D is globally competitive and likely to have adopted leading edge technology. Thus, it is unlikely that the slow growth reflects inability to maintain productivity growth. Similarly, strong exports would suggest adequate demand for its products. Thus, strong exports are unlikely to be the cause of slow growth.
- 5 C is correct. Conditional convergence means that convergence is conditional on the countries having the same savings rate, population growth rate, and production function. If these conditions hold, the neoclassical model implies convergence to the same *level* of per capita output as well as the same steady state growth rate.
- 6 C is correct. According to the neoclassical model, convergence should occur more quickly if economies are open and there is free trade and international borrowing and lending. Opening up the economy should increase the rate at which the capital-to-labor ratio converges among countries. However, in the neoclassical Solow model, after the reallocation of world savings, there is no permanent increase in the rate of growth in an economy. Both the developed and developing countries eventually grow at the same steady-state rate.

- 7 C is correct. Country C is the most likely to be a developing economy. Political instability, limited property rights, and poor public education and health are all factors that limit economic growth and thereby contribute to a relatively low standard of living.
- 8 A is correct. The associate economist can measure the effect of pure capital deepening by measuring the difference of the growth rates of labor productivity and total factor productivity (TFP). The larger the difference, the more important capital deepening is as a source of economic growth. From 2000–2010, Country A's labor productivity grew by 2.4% per year, of which 0.6% came from TFP growth and 1.8% from capital deepening ($2.4\% - 0.6\% = 1.8\%$).
- 9 A is correct. In the long run, the growth rate of GDP is the most important driver of stock market performance. Therefore, the associate economist should focus on the drivers of long-run potential GDP growth. The ratio of earnings to GDP cannot increase indefinitely since that would imply that profit would eventually absorb all of GDP. This ratio cannot shrink forever either since unprofitable companies will go out of business. Thus, the annualized growth rate of the earnings to GDP ratio must be approximately zero over long time horizons, and this ratio should not be a dominant factor in forecasting long-term stock market performance. Similarly, the price-to-earnings ratio cannot grow or contract at a finite rate forever because investors will not pay an excessive price for each dollar of earnings, nor will they give away earnings for free. Therefore the rate of change in the price-to-earnings ratio must be approximately zero over long time horizons and should not be a dominant factor in the forecast of long-term stock market performance.
- 10 A is correct. Credit rating agencies consider the growth rate of potential GDP when evaluating the credit risk of sovereign debt. The chief economist's expectation for lower potential GDP growth for Country B over the next decade increases the perceived credit risk of its sovereign bonds.
- 11 C is correct. The higher per capita output for Country A is most likely due to differences in the cumulative impact of technological progress embodied in total factor productivity. Technological progress raises the productive capacity of a country. Technological progress causes an upward shift in the entire production function, resulting in higher output per worker for a given level of capital per worker.
- 12 A is correct. Demographic factors can positively or negatively contribute to a country's sustainable rate of economic growth. After the next 10 years, Country A is expected to experience a growing share of the population over the age of 65 and a declining percentage of the population under the age of 16. All else the same, this implies slower growth of the labor force and hence slower growth of potential GDP. Immigration could offset these demographic challenges. However, Statement 3 indicates that Country A is expected to experience minimal immigration.
- 13 A is correct. Country C is an example of a country endowed with an abundant natural resource yet experiencing slow economic growth. While labor force growth is an important source of economic growth, it is the least likely explanation of the sluggish economic growth in Country C. As shown in Exhibit 1, growth in total hours worked has accounted for most of Country C's growth. Furthermore, export driven currency appreciation and poorly developed economic institutions are both likely causes of sluggish growth in countries with abundant natural resources.

- 14 B is correct. Population growth can increase the growth rate of the overall economy, but does not impact the rate of increase in *per capita* GDP. Therefore, population growth does not explain Country A's higher rate of per capita income growth. An increase in labor force participation could, however, raise the growth of per capita GDP.
- 15 A is correct. Klymchuk is referring to the concept of club convergence. The basic premise is that lower income members of the club are converging to the income levels of the richest countries. This implies that the countries with the lowest per capita income in the club grow at the fastest rate. Countries outside the club, however, continue to fall behind.
- 16 A is correct. Amaral's initiative to implement a new dividend tax is likely to impede inflows of equity capital by making equity investment in Brazil less attractive for foreign investors. Capital flows, or lack thereof, have a major impact on economic growth because, in an open economy, world savings can finance domestic investment. As a potential source of funds, foreign investment breaks the vicious cycle of low income, low domestic savings, and low investment.
- 17 A is correct. Mantri's proposal to sponsor a patent initiative, which is likely to result in technology investment and improvement, is likely to cause a proportional upward shift in the entire production function, allowing the economy to produce higher output per worker for a given level of capital per worker. Technological progress also increases the marginal product of capital relative to its marginal cost.
- 18 C is correct. Maintaining a low currency exchange rate is a policy aimed at maintaining demand for the country's exports. It would have little direct impact on the potential growth rate of aggregate supply. It might boost long-term capacity growth indirectly, however, by encouraging adoption of leading edge technology. Nonetheless, it would not be expected to be as powerful as capital deepening and/or investment in technology.
- 19 A is correct. Kanté's decision to invest in equities in India is supported by the country's strong economic growth. For global investors, economic growth is important since equity composite valuations depend to a great extent on both the level of economic output (GDP per capita and GDP overall) and on the rate of economic growth. Relative to Brazil, the growth rate in per capita GDP has been much higher, and furthermore, the growth rate in GDP has also been much higher than that of Brazil. In contrast to the growth rate, the relatively low *level* of GDP per capita in India is less likely to indicate attractive equity investment opportunities. Low per capita GDP suggests that India may lack sufficient industrial and financial infrastructure to support some types of industries. It also indicates that domestic purchasing power is relatively limited, decreasing the potential for higher-margin, domestically-oriented businesses.
- 20 A is correct. With Mali's low standard of living, i.e., GDP per capita and large informal workforce, the tax rate is unlikely to be an impediment to growth, so lowering the tax rate is not likely to be a major contributor to growth.
- 21 B is correct. The strategy for Mali to impose high tariffs (trade restrictions) on imports is likely to undermine rather than enhance growth and therefore is not supportive of convergence with developed economies. Freer trade (fewer trade restrictions) tends to enhance growth by, for example, inducing a shift of resources into industries in which the country has a comparative thereby increasing overall productivity; forcing less efficient domestic companies to exit and more efficient ones to innovate; allowing domestic producers to more

fully exploit economies of scale by selling to a larger market; and enabling less advanced sectors of an economy to catch up with more advanced countries or sectors through knowledge spillovers.

PRACTICE PROBLEMS

The following information relates to Questions 1–4

Tiu Asset Management (TAM), a hypothetical financial services firm, recently hired Jonna Yun. Yun is a member of TAM's Global Equity portfolio team and is assigned the task of analyzing the effects of regulation on the financial services sector of a particular country. In her first report to the team, Yun makes the following statements:

- Statement 1 The country's regulator, a government agency, concerned about systemic risk, is calling for an accelerated adoption of centralized derivatives settlement (as opposed to bilateral settlement between two counterparties)—a more stringent rule—ahead of other major countries that are considering a similar move.
- Statement 2 Regulators use various tools to intervene in the financial services sector.
- Statement 3 Regulations may bring benefits to the economy, but they may also have unanticipated costs.
- Statement 4 The country's regulatory authorities are considering a regulation that is similar to Regulation Q in the United States, which imposed a ceiling on interest rates paid by banks for certain bank deposits.

- 1 What is the *most likely* basis for the concerns noted in Statement 1?
 - A Externalities
 - B Regulatory arbitrage
 - C Informational friction
- 2 The tools *least likely* to be used by regulators to intervene in financial markets owing to informational frictions are:
 - A blackout periods.
 - B capital requirements.
 - C insider-trading restrictions.
- 3 Which of the following is *most likely* an unanticipated effect of regulation?
 - A Hiring compliance lawyers
 - B Setting legal standards for contracts
 - C Establishing employers' rights and responsibilities
- 4 After Regulation Q was imposed, the demand for money market funds *most likely*:
 - A increased.
 - B decreased.
 - C remained unchanged.

The following information relates to Questions 5–11

Cate Stephenson is an analyst in the economics research division of an international securities firm. She is conducting research on the regulatory environment in certain European countries. Stephenson begins with an analysis of a hypothetical country, Genovia.

Genovia has recently introduced a new accounting statute. In Genovia, there is an independent regulator—“Le régulateur.” Le régulateur is not a self-regulating organization (SRO). There is also an SRO—“L’organisation.” L’organisation is not an independent regulator.

In her research report, Stephenson makes the following statements:

- Statement 1 Le régulateur has been given legal authority by the government to enforce the new statute.
- Statement 2 L’organisation issues administrative regulations related to the new statute using government funding.
- Statement 3 L’organisation has member companies that accept the authorization of L’organisation to set and enforce rules and standards.

Stephenson and her supervisor discuss the intended and unintended effects of implementing the new statute, and Stephenson makes two comments.

- Comment 1 It is likely that some unintended consequences will be identified in regulatory filings prior to implementation of the new legislation.
- Comment 2 Indirect costs arise because of unintended consequences and may result in high unanticipated costs.

Stephenson reads a report titled “International Trade,” which has three sections about Genovia’s policies and regulations.

- The first section of the report discusses policies that legislators may implement to accomplish Genovia’s objective of promoting free trade on industrial goods.
- The second section of the report covers corporate domicile. Stephenson learns that regulators in Genovia recently amended regulations to encourage foreign businesses to move their corporate domicile to Genovia.
- The third section of the report reviews the regulation of commerce. Genovia’s goal is to establish an environment that encourages foreign businesses to increase trade with domestic businesses. Stephenson considers two features of Genovia’s regulation of commerce.

- Feature 1 Recent court decisions have upheld financial liability and bankruptcy laws.
- Feature 2 A legal structure that governs contracts and each party’s rights is in place.

Stephenson then reviews two initiatives by Genovia to improve domestic policies and regulations.

- The first initiative by Genovia is its passage of conflict-of-interest regulations. Regulators implement regulatory restrictions and regulatory mandates that apply to employees of securities firms. One of Stephenson’s research colleagues writes reports on a company in which he owns shares.

- The second initiative by Genovia is to reduce pollution and promote renewable electricity generation. Two years ago, the government implemented taxes on fossil fuels and subsidies on hydropower and other renewables. Stephenson reviews the changes in sources of electricity production since the policies were introduced, shown in Exhibit 1.

Exhibit 1 Genovia's Domestic Electricity Generation Production

| Sector | Year 0 | Year 1 | Year 2 |
|------------------|--------|--------|--------|
| Fossil fuels | 462 | 446 | 426 |
| Hydropower | 186 | 231 | 273 |
| Other renewables | 97 | 120 | 154 |
| Total | 745 | 797 | 853 |

Note: Amounts are in terawatt hours (TWh).

- 5 Which of Stephenson's statements regarding Le régulateur and L'organisation is correct?
 - A Only Statement 1 is correct.
 - B Only Statement 2 is correct.
 - C Both Statement 1 and Statement 2.
- 6 Is Stephenson's Statement 3 correct?
 - A Yes
 - B No, because L'organisation is given the authority to enforce regulations by a government agency
 - C No, because pressure from its member companies prevents L'organisation from enforcing its rules and standards
- 7 Which of Stephenson's comments to her supervisor is most likely correct?
 - A Only Comment 1 is correct.
 - B Only Comment 2 is correct.
 - C Both Comment 1 and Comment 2.
- 8 Which of the following policies would *best* address Genovia's objective of promoting free trade on industrial goods?
 - A Imposing tariffs on foreign-produced goods
 - B Allowing a floating currency
 - C Providing subsidies to domestic companies
- 9 By amending regulations to encourage foreign businesses to change their corporate domicile, regulators are encouraging regulatory:
 - A capture.
 - B arbitrage.
 - C competition.
- 10 Which feature discussed in the third section of "International Trade" will *most likely* help Genovia achieve its goal of encouraging foreign businesses to increase trade with domestic businesses?
 - A Only Feature 1
 - B Only Feature 2

- Ⓒ Both Feature 1 and Feature 2
- 11 Based on Exhibit 1, which government policy has been *most effective* in helping Genovia achieve its second initiative?
- Ⓐ Tax on fossil fuels
 - Ⓑ Subsidy on hydropower
 - Ⓒ Subsidy on other renewables

SOLUTIONS

- 1 B is correct. Firms based in the country are likely to be concerned because of the earlier timing of the application of new (more stringent) regulations in the country than in other large countries. With more stringent regulations, some business may flow to less stringent regulatory environments or jurisdictions.
- 2 A is correct. Blackout periods are established by *companies* in response to concerns about insider trading. Thus, blackout periods are not a tool used by regulators to intervene in the financial services sector. Capital requirements are used by government regulators to reduce systemic risk and financial contagion. Insider-trading restrictions are used by regulators concerned about insiders using their greater knowledge to the disadvantage of others; insider-trading restrictions respond to informational frictions.
- 3 A is correct. The hiring of more lawyers to deal with compliance is an example of an “unintended” implementation cost. Establishing legal standards for contracts and employers’ rights and responsibilities are objectives (intended consequences) of some regulation.
- 4 A is correct. Regulation Q set a ceiling on the interest rates paid by banks for various types of deposits, which resulted in investors’ shifting funds to money market funds.
- 5 A is correct. Le régulateur, as an independent regulator but not an SRO, has legal authority from the Genovia government to regulate. Therefore, Le régulateur both enacts and enforces regulations related to the new accounting statute in Genovia.
- 6 A is correct. L’organisation is an SRO but not an independent regulator, so it is a private entity that is not affiliated with Genovia’s government. SROs that are not independent regulators receive authority from their members, who agree to comply with the organization’s rules and standards and its enforcement thereof.
- 7 C is correct. Comment 1 is correct because regulatory filings, in response to proposed regulations, often identify at least some of the unintended consequences prior to the implementation of the regulation. Comment 2 is correct because the cost of unintended consequences, including both indirect costs and unanticipated implementation costs, can be high.
- 8 B is correct. A floating currency allows international trade in Genovia to be market based. International disputes about whether a country is manipulating or fixing its currency price often center on issues related to competitiveness.
- 9 C is correct. Regulatory competition describes actions by regulators to encourage behaviors. Regulators may compete to provide a regulatory environment designed to attract certain entities (regulatory competition). By amending regulations, Genovia’s regulators seek to encourage foreign companies to change their corporate domicile.
- 10 C is correct. Genovia needs unambiguous laws concerning financial liability and bankruptcy to encourage foreign businesses to enter into contracts, particularly those that are long term and may involve sunk costs. The court decisions help Genovia achieve its goal. Also, clearly defined rules governing contracts, their interpretation, and each party’s legal rights under a contract are necessary. Thus, both features help Genovia achieve its goal.

- 11 C is correct. At the end of Year 2, the compound annual growth rate (CAGR) for each sector is calculated as follows: $(\text{Year 2}/\text{Year 0})^{0.5} - 1$.

$$\text{Fossil fuels: } (426/462)^{0.5} - 1 = -4\%$$

$$\text{Hydropower: } (273/186)^{0.5} - 1 = 21\%$$

$$\text{Other renewables: } (154/97)^{0.5} - 1 = 26\%$$

The CAGR indicates that the 26% increase in production from the subsidy on other renewables has been more effective than the 4% decrease in production from the tax on fossil fuels or the 21% increase in production from the subsidy on hydropower. Thus, the subsidy on other renewables of 26% is the highest, indicating that this policy has been the most effective in helping Genovia achieve its second initiative.