

Chapter 19 Accounting Exposure

Quiz

True-False Questions

- _____ 1. As taxes on the subsidiary's income are invariably computed by the host country on the basis of the subsidiary's income statement, there is no need whatsoever to translate this income into the parent's home currency for tax purposes.
- _____ 2. Taxes are always based on the parent's consolidated world-wide income (which, of course, requires translation).
- _____ 3. The choice of the translation method is similar to the choice between LIFO, FIFO, or average cost—no accounting method can possibly affect the true value of the firm.
- _____ 4. Accounting exposure is irrelevant if taxes are not affected. It follows that the firm need not worry about exchange rate changes at all.
- _____ 5. The International Accounting Standards Committee has imposed the current rate method world-wide.
- _____ 6. According to the monetary/non-monetary method, the true value of a real asset is the same in the two countries, and it is given by its foreign currency value translated at the current rate.

Ans. 1. false; 2. false; 3. false: there is a tax effect for inventory reporting methods, but in the US, there is no such impact from the choice of a translation method; 4. false: the second part is wrong, economic exposure matters; 5. false: the IASC only makes recommendations; 6. false: it uses the foreign currency value translated at the historic rate.

Matching Questions

Which exposure concept—*translation exposure* or *economic exposure*—matches best with the following statement?

This exposure:

- _____ 1. Has to do with the firm's cash flows and market value.
- _____ 2. Is forward-looking.
- _____ 3. Ignores off-balance-sheet items and future operations.
- _____ 4. Only exists for firms with foreign subsidiaries.
- _____ 5. Is relevant for all firms in a nonsheltered sector, including firms that potentially could become exporters or could potentially have to compete against foreign imports.
- _____ 6. Depends on the accounting method used if and only if the accounting method affects taxes.
- _____ 7. Depends on economic reality.

Ans. 1. economic; 2. economic; 3. translation; 4. translation; 5. economic; 6. economic; 7. economic.

Which translation method(s), if any, match(es) best with the following statement? The translation methods are *Current Rate*, *Current/Non-Current*, *Monetary/Non-Monetary*.

- _____ 1. Maximum consistency between the translated Asset and Liability statements and the originals (in host currency).
- _____ 2. Imperfect consistency between the changes in the translated Asset and Liability statements and the translated Profit and Loss statement.
- _____ 3. Short-term liabilities are exposed, but long-term liabilities are not.

- _____ 4. Short-term real assets are exposed, but long-term real assets are not.
_____ 5. Short-term financial assets are exposed.
_____ 6. Exposure corresponds with net working capital.
_____ 7. Exchange rates are viewed as mean-reverting.
_____ 8. PPP holds.
_____ 9. Exposure corresponds to Net Worth.
_____ 10. Most firms have translation gains when the host currency appreciates.
_____ 11. For most firms, exposure to the exchange rate (units of the parent's home currency per unit of foreign currency) is negative. That is, there is a translation gain if the host currency depreciates.
_____ 12. PPP holds, so real assets are not exposed.

Ans. 1. current rate; 2. all methods; 3. current/non-current; 4. current/non-current; 5. all methods; 6. current/non-current; 7. current-non-current; 8. monetary/non-monetary; 9. current rate; 10. current rate, and current/non-current; 11. monetary/non-monetary; 12. monetary/non-monetary.

Exercises

- E1. Why does the need arise to translate the financial statements of subsidiaries into a reference currency?
- A1. A firm's translates the financial statements of its subsidiaries into a reference currency because:
- Income earned by the foreign subsidiary is taxable in the parent's home currency, and therefore, a tax basis must be established.
 - Most countries require consolidation of the parent's and the subsidiary's financial statements for reporting purposes.
 - The financial statements are needed to make investment and financing decisions and to evaluate the performance of the firm.
 - Translation makes it possible to create comparable performance measures.
 - A benchmark is needed when valuing the firm.
- E2. You are given the following balance sheet information for the first two years of a Norwegian subsidiary's life, 19X3 and 19X4 (in millions of NOK, the subsidiary's currency).

ASSETS

Liquidities		3
Inventory		4
Fixed assets		
Investments 19X3	4	
Investments 19X4	1	
		<u>5</u>
		12

LIABILITIES

Equity		
Equity 19X3	4	
New equity mid-19X4	1	
		5
Retained earnings 19X4		2
Long-term debt		
Issued 19X3	2	
Issued 19X4	1	
		3
Short-term debt		<u>2</u>
		12

Notes: end 19X3 and 19X4, the exchange rate was USD/NOK 0.30 and 0.15, respectively. The rate in mid-19X4, when the equity was increased, was 0.16. Fixed assets were bought in 19X3 and 19X4; the figures shown are net of all 19X3-5 depreciation.

Assume that the firm uses the current rate method to translate its subsidiary's asset and liability statement.

- (a) Compute the exposure of these 19X4 balance sheet items to the 19X5 exchange rate.
- (b) Translate this balance sheet into USD—once assuming a rate of USD/NOK 0.20 at the end of 19X5, and once assuming a rate of USD/NOK 0.25. That is, compute the translated values of all items except equity adjustments, compute the total value of the assets, and finally compute the equity adjustments as the item that balances the totals for assets and liabilities.
- (c) Verify that the exposure, as computed in (a), multiplied by the difference in the two 19X5 rates (USD/NOK 0.05), produces the difference in the equity adjustments computed in part (b); that is, verify that $\Delta \text{Net Worth} = \text{Exposure} \times \Delta S$.

- A2. (a) Exposure = net worth = 12m – (3m + 2m) = NOK 7m.
 (b)

		USD/NOK	
	NOK	At 0.20	At 0.25
ASSETS			
Liquidities	3	0.60	0.75
Inventory	4	0.80	1.00
Fixed assets	<u>5</u>	<u>1.00</u>	<u>1.25</u>
	12	2.40	3.00
LIABILITIES			
Equity			
Equity 19X3	4	1.20	1.20
New equity mid-19X4	1	0.16	0.16
	5	1.36	1.36
Retained earnings 19X4	2	0.30	0.30
<i>Equity adjustments</i>	<i>n.a.</i>	<i><0.26></i>	<i>0.09</i>
Long-term debt	3	0.60	0.75
Short-term debt	<u>2</u>	<u>0.40</u>	<u>0.50</u>
	12	2.40	3.00

- (c) The equity adjustments differ by USD $(0.09 - (-0.26)) = \text{USD } 0.35 = \text{exposure} \times \Delta S = \text{NOK } 7\text{m} \times 0.05$.

E3. In the previous exercise, change the translation method to the current/non-current method.

- A3. (a) Exposure = short-term assets – short-term liabilities = $(3\text{m} + 4\text{m}) - 2\text{m} = \text{NOK } 5\text{m}$.

(b)

		USD/NOK	
	NOK	at 0.20	at 0.25
ASSETS			
liquidities	3	0.60	0.75
inventory	4	0.80	1.00
fixed assets			
investments 19X3	4	1.20	1.20
investments 19X4	1	0.15	0.15
	<u>5</u>	<u>1.35</u>	<u>1.35</u>
	12	2.75	3.10
LIABILITIES			
equity			
equity 19X3	4	1.20	1.20
new equity mid-19X4	1	0.16	0.16
	5	1.36	1.36
retained earnings 19X4	2	0.30	0.30
equity adjustments	n/a	<0.06>	0.19
long-T debt			
issued 19X4	2	0.60	0.60
issued 19X5	1	0.15	0.15
	3	0.75	0.75
short-T debt	<u>2</u>	<u>0.40</u>	<u>0.50</u>
	12	2.75	3.10

- (c) The equity adjustments differ by USD $(0.19 - (-0.06)) = \text{USD } 0.25 = \text{exposure} \times \Delta S = \text{NOK } 5\text{m} \times 0.025$.

E4. In the previous exercise, change the translation method to the monetary/non-monetary method.

A4. (a) Exposure = monetary assets – liabilities = 3m – (3m + 2m) = NOK –2m.

	NOK	(b) at 0.20	USD/NOK at 0.25
ASSETS			
liquidities	3	0.60	0.75
inventory	4	0.60	0.60
fixed assets			
investments 19X3	4	1.20	1.20
investments 19X4	1	0.15	0.15
	<u>5</u>	<u>1.35</u>	<u>1.35</u>
	12	2.55	2.70
LIABILITIES			
equity			
equity 19X3	4	1.20	1.20
new equity mid-19X4	1	0.16	0.16
	5	1.36	1.36
retained earnings 19X4	2	0.30	0.30
equity adjustments	n/a	<0.11>	<0.21>
long-T debt	3	0.60	0.75
short-T debt	<u>2</u>	<u>0.40</u>	<u>0.50</u>
	12	2.55	2.70

(c) The equity adjustments differ by USD $((-0.21) - (-0.11)) = \text{USD } -0.10 = \text{exposure} \times \Delta S = \text{NOK } -2\text{m} \times 0.05$.

Mind-Expanding Exercise

ME1. In the above exercises, we asked you to compute the exposure of the 19X4 balance sheet items to the 19X5 exchange rate—not exposure of the 19X5 balance sheet items to the 19X5 exchange rate. Verify that the traditional definitions of exposure—net worth, net working capital, or the net monetary position—work perfectly only if we restrict attention to assets and liabilities that were in place one year before the translation.

A1. For assets and liabilities added in the reporting period—19X5, in the exercises—there is no distinction between the historic rate and the current exchange rate. Thus, for the 19X5 additions, the current rate still affects the translation even if the balance sheet item is deemed to be unexposed. For instance, investments made in 19X5 will be translated at the 19X5 exchange rate under all methods, which means that the 19X5 exchange rate partly affects the converted value of assets even under the monetary/non-monetary or current/non-current methods. Similarly, earnings retained in 19X5 will be translated at the 19X5 rate, so that the translated net worth is affected by the 19X5 exchange rate, and so on.

Chapter 20 Managing the Risks in International Trade

Quiz Questions

True-False Questions

- _____ 1. Trade on open account, with payment after or on delivery, is the standard way of doing business internationally among unrelated parties without an established business relationship, because this method of payment has proven its value in domestic trade.
- _____ 2. Under payment on or after delivery, most of the risks are borne by the exporter.
- _____ 3. Under payment before shipment, the exporter bears only the risk of contract cancellation prior to shipment.
- _____ 4. Suppose that, under payment upon delivery, the importer does not accept the goods. Then the exporter has no problem whatsoever, as he still is in possession of the goods.
- _____ 5. In international trade, there often is a relatively long time gap between production outlays and payment by the final customer. However, it does not generally matter who provides this working capital. In addition, this issue of how to finance working capital is entirely separable from the issue of how the payment is structured.
- _____ 6. Discounting a bill is similar to selling the bill for a price equal to the discounted value of the nominal (future) value.
- _____ 7. Discounting a bill simply means giving an advance on the bill equal to the discounted value of the nominal (future) value. In addition, the discounter receives the bill as security for the payment.
- _____ 8. Discounting a bill is like factoring with financing but without credit insurance, except that discounting of bills can be done transaction by transaction. Similarly, discounting without recourse is like factoring with financing and credit insurance.
- _____ 9. Forfeiting, or discounting without recourse, is like factoring with financing and credit insurance, except that discounting of bills can be done transaction by transaction.
- _____ 10. Under international law, a foreign government can never be judged by a court.
- _____ 11. Under ordinary D/A and D/P (without L/C) the intervening bank still guarantees the payment, and will therefore reject any set of documents that is not perfectly conformable with the contract.
- _____ 12. A trust receipt is often used to reduce the seller's risks in a D/P arrangement.
- _____ 13. A Letter of Credit is a statement by a bank that promises to extend a loan to the exporter if certain conditions are met.
- _____ 14. An irrevocable L/C offers the same security as an acceptance signed by the importer and insured with a government agency against credit risks.
- _____ 15. An irrevocable, confirmed L/C offers the same security as an acceptance signed by the importer and insured with a government agency against political and credit risks.
- _____ 16. Under an L/C, the bank agrees to inspect the goods, and to pay the exporter or accept his bill if the goods are fully conformable with the contract.

Ans. 1. false; 2. true; 3. true; 4. false: shipping the goods back is expensive; 5. false: we should minimize the cost which cost depends on the contract (for example, bills allow for cheap and swift financing); 6. false: discounting is like borrowing against a bill, not selling it; 7. true; 8. true; 9. false: with factoring there is still political risk; 10. false; 11. false; 12. false: used with D/A; 13. false; 14. false: the issuing bank may default or may

not be allowed to buy foreign currency. The bank's credit risk is not the government's credit risk; 15. false: the confirming bank may default; 16. false.

Additional Quiz Questions

- Q1. What are the risks borne by the importer and exporter, respectively, under payment before shipment and payment on delivery, respectively?
- A1. In the case of cash payment before shipment, the importer bears all of the risk because the exporter may ship the goods too late, ship goods of a substandard quality, ship an incorrect quantity or not ship the goods at all. In addition, the exporter may not have obtained an export license. In the case of cash payment upon delivery, the importer generally takes possession of the goods and inspects them before paying. The exporter bears all of the risk because the importer may refuse to pay or to take possession of the goods.
- Q2. What characteristics of trade bills make these instruments well-suited to obtain low-cost financing?
- A2. Trade bills are an inexpensive form of financing because they are negotiable and self-financing, and there is a right of recourse for every preceding holder of a bill. In addition, trade bills are sometimes discountable at a subsidized rate, and protested bills are listed which increases the cost of defaulting and, in turn, lowers the risk of default.
- Q3. Why is legal redress in international trade disputes more difficult than in domestic trade?
- A3. Legal redress may be difficult due to:
- Language barriers and different legal and judicial systems. In addition, a country may have a shortage of hard currency.
 - Enforcement.
 - Costs from delays.
 - A government is more or less out of reach.
- Q4. The writing and confirming of L/Cs must achieve more than just risk-shifting without overall gains, otherwise these techniques would not exist. What are the advantages?
- A4.
- Most of the risks are diversifiable to the bank, but not to a small- or medium-sized enterprise.
 - The monetary and non-monetary costs of legal proceedings are lower because the importer's bank operates in the same legal environment as the defaulting party.
 - The importer's bank is better able to assess the importer's riskiness.
 - The importer is less likely to default on a loan made with his/her own bank.
- Q5. Some of the documents used in D/A, D/P, and documentary credits represent title to the goods. What purpose do the other documents serve?
- A5. For instance, the documents prove that the goods have been shipped and conform with the contract or that the goods will clear customs. The documents may also include insurance papers. (For a full list, see the Appendix 20A.)
- Q6. Fill in the correct word from the following list: *accept, the drawer, trade bill, promissory note, the drawee, You Owe Me, I Owe You, banker's acceptance, trade acceptance*.

As the word suggests, in many ways a (a) is like a summary of the invoice. The supplier ((b)) *draws* the bill on his customer ((c)). That is, like an invoice, a trade bill is

a '(d)' document. In itself, a trade bill is not as trustworthy as an '(e)' document, such as a (f), which is written and signed by the debtor. To give a trade bill the same credibility as a (g), the drawer typically sends it to the drawee with a request to (h) it, i.e., to add her signature and thus to acknowledge and confirm the existence of the underlying debt. A trade bill drawn on and accepted by the importer is called a (i); a bill drawn on and accepted by a bank is called a(j).

A6. (a) trade bill; (b) drawer; (c) drawee; (d) You Owe Me; (e) I Owe Me; (f) promissory note; (g) promissory note; (h) accept; (i) trade acceptance; (j) banker's acceptance.

Q7. Complete the following table, by adding "+", "-", or "0" in each cell. A "+"-rating means that the exporter (in part *a* of the table), or the importer (in part *b*) is adequately covered against the risk described on the left hand side of the corresponding line. A "-" rating reflects that the risk is uncovered. A "0" rating reflects a compromise.

	Payment after delivery	Payment before shipment	Documents against payment (D/P)	Documents against acceptance (D/A)	Irrevocable L/C	Irrevocable confirmed L/C
a. Exporter's point of view						
a.1. Importer refuses goods Importer refuses documents						
a.2. Importer defaults Issuing bank defaults						
a.3. No license to import the goods No license to remit payment						
b. Importer's point of view						
b.1. Exporter does not send the goods						
b.2. Goods sent do not conform						
b.3. No license to ship the goods						

Mind-Expanding Exercise

E1. The Johannesburg branch of Shanghai Chartered Bank (SCB) is considering a three-month loan to Botswana Coffee Plantations (BCP), to be backed by BCP's export receipts.¹ The expected harvest is about 100 tons, and the expected world coffee price is about 7,000 crowns/ton.

- SCB must decide how much it can lend if it can use BCP's entire export revenue as security. What precautions could SCB take to make sure that the export revenue is actually used to pay back the loan?
- One of SCB's analysts is asked to estimate the worst-case export revenue. Unfortunately, both BCP and the coffee market have changed quite a lot since the

¹ Unlike Freedonia and Prisonia, Botswana actually exists. It is a peaceful, democratic, and relatively prosperous country north of the Republic of South Africa.

company's founding 20 years ago, so that the analyst cannot simply use the history of BCP's export revenue to assess the risk.

The analyst assumes that the actual output (\tilde{O}) and the price (\tilde{P}) are lognormally distributed, because this distribution is more consistent with the non-negativity of outputs and prices than a normal distribution and because then the revenue, ($\tilde{O} \times \tilde{P}$), is also conveniently lognormal. On the basis of commodity option prices and output data from similar plantations, the analyst then estimates the parameters of output and prices separately. The plan is to compute the confidence intervals for the normally distributed variable $\ln(\tilde{O} \times \tilde{P}) = \ln(\tilde{O}) + \ln(\tilde{P})$, which has mean and variance equal to $[\mu_o + \mu_p]$ and $[\sigma_o^2 + 2 \text{cov}_{o,p} + \sigma_p^2]$, respectively. From the lower bound on $\ln(\tilde{O} \times \tilde{P})$ the analyst can then infer the lower bound on $(\tilde{O} \times \tilde{P})$.

From traded commodity option prices, SCB's analyst infers that the standard deviation of the log price is 10 percent over three months (20 percent p.a.). From past data on planted acreage and output for similar plantations, the standard deviation of BCP's output is estimated to be 15 percent. Using the output and price expectations given above, what are μ_o and μ_p —the expected values of $\ln(\tilde{O})$ and $\ln(\tilde{P})$ rather than \tilde{O} and the price \tilde{P} ?

- (c) The analyst argues that, since Botswana has only a small share in the coffee market, the variance of the export revenue can be computed as if the covariance between local output and the world price is zero. Is this a conservative assumption or not? (Hint: what would be the sign of the covariance between the world output of coffee and the world price, and between BCP's output and the world price?)
 - (d) How would SCB compute a 90 percent confidence interval for BCP's entire export revenue?
 - (e) It turns out that BCP needs far less than 500,000 crowns. BCP signs a contract with HEC Jouy-en-Josas, a well-known and solid French coffee trader, to deliver 40 tons at the forward price of 6,900 crowns/ton. When computing the maximum amount it can lend on the strength of this forward contract, should SCB use a similar safety margin relative to the expected revenue from this transaction as the one computed in part (e)?
 - (f) Suppose instead that HEC agrees to buy 50 tons at the (as yet unknown) future spot price for coffee. How should the analyst assess the risk in this case?
- A1. (a) SCB could stipulate that BCP sell all its output through one trader trusted by SCB, and that the trader pay all proceeds of the sale to SCB.
- (b) From the Appendix to Chapter 8, we have:

$$100 = E(\tilde{O}) = \exp(\mu_o + \frac{1}{2} \sigma_o^2) = \exp(\mu_o + 0.01125).$$

Thus, $\mu_o = \ln 100 - 0.01125 = 4.5939202$. Similarly,

$$7,000 = E(\tilde{P}) = \exp(\mu_p + \frac{1}{2} \sigma_p^2) = \exp(\mu_p + 0.005).$$

$$\text{Thus, } \mu_p = \ln 7,000 - 0.005 = 8.8486654.$$

- (c) In a market like coffee, price shocks primarily reflect supply shocks rather than demand shocks. Thus, low world outputs are associated with high world prices. BCP's output is likely to be positively correlated with world output because there are common factors that may affect all sub-Saharan producers in the same direction. Thus, the covariance between BCP's output and the world price is more likely to be negative than zero or positive.

The assumption of a zero covariance is, therefore, conservative: the true variance of $\ln(\tilde{O} \times \tilde{P}) = \ln(\tilde{O}) + \ln(\tilde{P})$ is smaller than $\sigma_o^2 + \sigma_p^2$. That is, by assuming a zero covariance, the analyst would ignore the (weak) tendency for unexpectedly low outputs to be compensated by unexpectedly high prices.

- (d) If the covariance is assumed to be zero, then $\ln(\tilde{O} \times \tilde{P}) = \ln(\tilde{O}) + \ln(\tilde{P})$ is normally distributed with the mean:

$$\mu_o + \mu_p = 4.5939202 + 8.8486654 = 13.442586,$$

and the standard deviation

$$\sqrt{\sigma_o^2 + \sigma_p^2} = \sqrt{0.1^2 + 0.15^2} = 0.180.$$

Thus, the expected export revenue is, predictably, $\exp(13.442586 + 0.0162) = 700,000$. The ± 1.96 standard deviation confidence interval for the log of revenue is $13.441 \pm 1.96 \times 0.18 = 13.0892$ – 13.7959 , which then implies an interval for revenue of (after taking exponentials) 491,635–996,675. Thus, a loan with a future value of 480,000 crowns corresponds fairly well with a conservatively computed 90 percent confidence interval.

- (e) Barring a war, the probability that BCP would not be able to deliver 40 percent of the expected harvest is trivially small. Moreover, with the price fixed, there is no price risk either. Thus, the only risks are the risks of a war, or the risks of HEC defaulting on its forward purchase. Both risks are tiny.
- (f) The delivery risk is again trivial, but in the absence of a forward contract, the price risk is not. The variable $\ln(50 \times \tilde{P})$ has a mean equal to $\ln 50 + \mu_p = 12.760688$ and a standard deviation equal to $\sigma_p = 0.15$. The lower bound on the log of revenue is then $12.760688 - (1.96 \times 0.15) = 12.466688$, implying a lower bound of $\exp(12.466688) = 259,546$ crowns for the revenue from this contract. Note that this is not much higher than half of the lower bound for the value of the entire harvest. This is because the elimination of quantity risk reduces the standard deviation of the revenue by only 3 percent (from 18 percent, see part (d), to 15 percent).