
CHAPTER 9: OPERATING EXPOSURE**1. Definitions. Define the following terms:**

Economic exposure emphasizes that the exposure is created by the economic consequences of an unexpected exchange rate change. Economic consequences, in turn, suggests that the impact is due to the response of external forces in the economy, rather than, say, something directly under the control of management. *Competitive exposure* suggests that the consequences of an unexpected exchange rate change are due to a shift in the competitive position of a firm, vis-à-vis its competitors. *Strategic exposure* suggests that matters of long-range cost changes and price setting, needed to anticipate or adjust to an unexpected change in exchange rates, are matters of corporate strategy; i.e., how the company positions itself in anticipation of risks caused by exchange rate changes.

2. Operating versus transaction exposure. Explain the difference between operating exposure and transaction exposure.

Both exposures deal with changes in expected cash flows. *Transaction exposure* deals with changes in near-term cash flows that have already been contracted for (such as foreign currency accounts receivable, accounts payable, and other debts). *Operating exposure* deals with changes in long-term cash flows that have not been contracted for but would be expected in the normal course of future business. One might view operating exposure as “anticipated future transactions exposure,” although the concept is broader because the impact of the exposure might be through sales volume or operating cost changes.

Given a known exchange rate change, the cash flow impact of transaction exposure can be measured precisely whereas the cash flow impact of operating exposure remains a conjecture about the future.

3. Unexpected exchange rate changes;

a. Why do unexpected exchange rate changes contribute to operating exposure, but expected exchange rate changes do not? An *expected* change in foreign exchange rates is not included in the definition of operating exposure, because both management and investors should have factored this information into their evaluation of anticipated operating results and market value. From a management perspective, budgeted financial statements already reflect information about the effect of an expected change in exchange rates. For example, under equilibrium conditions the forward rate might be used as an unbiased predictor of the future spot rate. In such a case management would use the forward rate when preparing the operating budgets, rather than assume the spot rate would remain unchanged.

b. Explain the time horizons used to analyze unexpected changes in exchange rates. An unexpected change in exchange rates impacts a firm's expected cash flows at four levels, depending on the time horizon used.

The first-level impact is on expected cash flows in the one-year operating budget. The gain or loss depends on the currency of denomination of expected cash flows. The currency of denomination cannot be changed for existing obligations, such as those defined by transaction exposure, or even for implied obligations such as purchase or sales commitments. Apart from real or implied obligations, in the short run it is difficult to change sales prices or renegotiate factor costs. Therefore realized cash flows will differ from those expected in the budget. However, as time passes, prices and costs can be changed to reflect the new competitive realities caused by a change in exchange rates.

The second-level impact is on expected medium-run cash flows, such as those expressed in two- to five-year budgets, assuming parity conditions hold among foreign exchange rates, national inflation rates, and national interest rates. Under equilibrium conditions the firm should be able to adjust prices and factor

costs over time to maintain the expected level of cash flows. In this case the currency of denomination of expected cash flows is not as important as the countries in which cash flows originate. National monetary, fiscal, and balance of payments policies determine whether equilibrium conditions will exist and whether firms will be allowed to adjust prices and costs.

If equilibrium exists continuously, and a firm is free to adjust its prices and costs to maintain its expected competitive position, its operating exposure may be zero. Its expected cash flows would be realized and therefore its market value unchanged since the exchange rate change was anticipated. However, it is also possible that equilibrium conditions exist but the firm is unwilling or unable to adjust operations to the new competitive environment. In such a case the firm would experience operating exposure because its realized cash flows would differ from expected cash flows. As a result, its market value might also be altered.

The third-level impact is on expected medium-run cash flows assuming disequilibrium conditions. In this case the firm may not be able to adjust prices and costs to reflect the new competitive realities caused by a change in exchange rates. The firm's realized cash flows will differ from its expected cash flows. The firm's market value may change because of the unanticipated results.

The fourth-level impact is on expected long-run cash flows, meaning those beyond five years. At this strategic level a firm's cash flows will be influenced by the reactions of existing and potential competitors to exchange rate changes under disequilibrium conditions. In fact, all firms that are subject to international competition, whether they are purely domestic or multinational, are exposed to foreign exchange operating exposure in the long run whenever foreign exchange markets are not continuously in equilibrium.

4. **Macroeconomic uncertainty. Explain how the concept of macroeconomic uncertainty expands the scope of analyzing operating exposure.**

Macroeconomic uncertainty is the sensitivity of the firm's future cash flows to macroeconomic variables in addition to foreign exchange, such as changes in interest rates and inflation rates.

5. **Strategic response. The objective of both operating and transaction exposure management is to anticipate and influence the effect of unexpected changes in exchange rates on a firm's future cash flows. What strategic alternative policies exist to enable management to manage these exposures?**

Diversifying operations and diversifying financing.

6. **Managing operating exposure. The key to managing operating exposure at the strategic level is for management to recognize a disequilibrium in parity conditions when it occurs and to be pre-positioned to react in the most appropriate way. How can this task best be accomplished?**

The key to effective preparations for an unexpected devaluation is *anticipation*. Major changes to protect a firm after an unexpected devaluation are minimally effective.

Diversifying operations. World-wide diversification in effect pre-positions a firm to make a quick response to any loss from operating exposure. The firm's own internal cost control system and the alertness of its foreign staff should give the firm an edge in anticipating countries where the currency is weak. Recognizing a weak currency is different from being able to predict the time or amount of a devaluation, but it does allow some defensive planning. If the firm is already diversified, it should be able to shift sourcing, production or sales effort from one country/currency to another in order to benefit from the change in the post-devaluation economic situation. Such shifts could be marginal or major.

Diversifying financing. Unexpected devaluations change the cost of the several components of capital – in particular, the cost of debt in one market relative to another. If a firm has already diversified its sources of financing, that is, established itself as a known and reputable factor in several capital markets, it can quickly move to take advantage of any temporary deviations from the international Fisher effect by changing the country or currency where borrowings are made.

7. Diversifying operations.

- a) **How can a MNE diversify operations?** If a firm's operations are diversified internationally, management is pre-positioned both to recognize disequilibrium when it occurs and to react competitively. Consider the case where purchasing power parity is temporarily in disequilibrium. Although the disequilibrium may have been unpredictable, management can often recognize its symptoms as soon as they occur. For example, management might notice a change in comparative costs in the firm's own plants located in different countries. It might also observe changed profit margins or sales volume in one area compared to another, depending on price and income elasticities of demand and competitors' reactions.

Recognizing a temporary change in worldwide competitive conditions permits management to make changes in operating strategies. Management might make marginal shifts in sourcing raw materials, components, or finished products. If spare capacity exists, production runs can be lengthened in one country and reduced in another. The marketing effort can be strengthened in export markets where the firm's products have become more price competitive because of the disequilibrium condition.

- b) **How can a MNE diversify financing?** If a firm diversifies its financing sources, it will be pre-positioned to take advantage of temporary deviations from the international Fisher effect. If interest rate differentials do not equal expected changes in exchange rates, opportunities to lower a firm's cost of capital will exist. However, to be able to switch financing sources, a firm must already be well known in the international investment community, with banking contacts firmly established. Once again, this is not an option for a domestic firm that has limited its financing to one capital market.

Diversifying sources of financing, regardless of the currency of denomination, can lower a firm's cost of capital and increase its availability of capital. It could also diversify such risks as restrictive capital market policies, and other constraints if the firm is located in a segmented capital market. This is especially important for firms resident in emerging markets.

8. Proactive management of operating exposure. Operating and transaction exposures can be partially managed by adopting operating or financing policies that offset anticipate foreign exchange exposures. What are four of the most commonly employed proactive policies?

The four most common proactive policies and a brief explanation are:

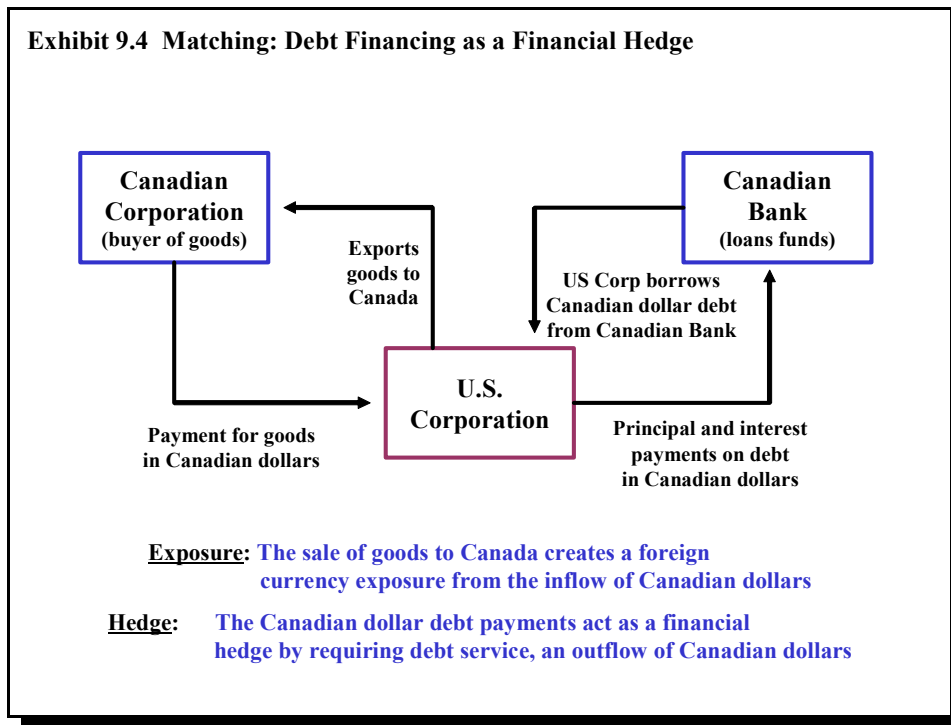
- 1) *Matching currency cash flows.* The essence of this approach is to create operating or financial foreign currency cash outflows to match equivalent foreign currency inflows. Often debt is incurred in the same foreign currency in which operating cash flows are received.
- 2) *Risk-sharing agreements.* Contracts, including sales and purchasing contracts, between parties operating in different currency areas can be written such that any gain or loss caused by a change in the exchange rate will be shared by the two parties.
- 3) *Back-to-back loans.* Two firms in different countries lend their home currency to each other and agree to repay each other the same amount at a latter date. This can be viewed as a loan between two companies (independent entities or subsidiaries in the same corporate family) with each participant both making a loan

and receiving 100% collateral in the other's currency. A back-to-back loan appears as both a debt (liability side of the balance sheet) and an amount to be received (asset side of the balance sheet) on the financial statements of each firm.

- 4) *Currency swap*. In terms of financial flows, the currency swap is almost identical to the back-to-back loan. However in a currency swap, each participant gives some of its currency to the other participant and receives in return an equivalent amount of the other participant's currency. No debt or receivable shows on the financial statements as this is in essence a foreign exchange transaction. The swap allows the participants to use foreign currency operating inflows to unwind the swap at a later date.

9. **Matching currency exposure.**

- a) **Explain how matching currency cash flows can offset operating exposure.** One way to offset an anticipated continuous long exposure to a particular currency is to acquire debt denominated in that currency.
- b) **Give an example of matching currency cash flows.** Exhibit 9.4 depicts the exposure of a U.S. firm with continuing export sales to Canada. In order to compete effectively in Canadian markets, the firm invoices all export sales in Canadian dollars. This policy results in a continuing receipt of Canadian dollars month after month. If the export sales are part of a continuing supplier relationship, the long Canadian dollar position is relatively predictable and constant.



10. **Risk sharing.** An alternative arrangement for managing operating exposure between firms with a continuing buyer-supplier relationship is risk sharing. Explain how risk sharing works.

Risk-sharing is a contractual arrangement in which the buyer and seller agree to “share” or split currency movement impacts on payments between them. If the two firms are interested in a long-term relationship based

on product quality and supplier reliability and not on the whims of the currency markets, a cooperative agreement to share the burden of currency risk management may be in order.

If Ford's North American operations import automotive parts from Mazda (Japan) every month, year after year, major swings in exchange rates can benefit one party at the expense of the other. (Ford is a major stockholder of Mazda, but it does not exert control over its operations. Therefore, the risk-sharing agreement is particularly appropriate; transactions between the two are both intercompany and intracompany. A risk-sharing agreement solidifies the partnership.) One potential solution would be for Ford and Mazda to agree that all purchases by Ford will be made in Japanese yen at the current exchange rate, as long as the spot rate on the date of invoice is between, say, ¥115/\$ and ¥125/\$. If the exchange rate is between these values on the payment dates, Ford agrees to accept whatever transaction exposure exists (because it is paying in a foreign currency). If, however, the exchange rate falls outside this range on the payment date, Ford and Mazda will share the difference equally.

11. Back-to-back loans. Explain how back-to-back loans can hedge foreign exchange operating exposure.

A *back-to-back loan*, also referred to as a *parallel loan* or *credit swap*, occurs when two business firms in separate countries arrange to borrow each other's currency for a specific period of time. At an agreed terminal date they return the borrowed currencies. The operation is conducted outside the foreign exchange markets, although spot quotations may be used as the reference point for determining the amount of funds to be swapped. Such a swap creates a covered hedge against exchange loss, since each company, on its own books, borrows the same currency it repays. Back-to-back loans are also used at a time of actual or anticipated legal limitations on the transfer of investment funds to or from either country.

12. Currency swaps. Explain how currency swaps can hedge foreign exchange operating exposure. What are the accounting advantages of currency swaps?

A *currency swap* resembles a back-to-back loan except that it does not appear on a firm's balance sheet. The term *swap* is widely used to describe a foreign exchange agreement between two parties to exchange a given amount of one currency for another and, after a period of time, to give back the original amounts swapped. Care should be taken to clarify which of the many different swaps is being referred to in a specific case.

In a currency swap, a firm and a swap dealer or swap bank agree to exchange an equivalent amount of two different currencies for a specified period of time. Currency swaps can be negotiated for a wide range of maturities up to at least ten years. If funds are more expensive in one country than another, a fee may be required to compensate for the interest differential. The swap dealer or swap bank acts as a middleman in setting up the swap agreement.

A typical currency swap first requires two firms to borrow funds in the markets and currencies in which they are best known. For example, a Japanese firm would typically borrow yen on a regular basis in its home market. If, however, the Japanese firm were exporting to the United States and earning U.S. dollars, it might wish to construct a *matching cash flow hedge* which would allow it to use the U.S. dollars earned to make regular debt-service payments on U.S. dollar debt. If, however, the Japanese firm is not well known in the U.S. financial markets, it may have no ready access to U.S. dollar debt.

One way in which it could, in effect, borrow dollars, is to participate in a *cross-currency swap*. The Japanese firm could swap its yen-denominated debt service payments with another firm which has U.S. dollar-debt service payments. This swap would have the Japanese firm "paying dollars" and "receiving yen." The Japanese firm would then have dollar-debt service without actually borrowing U.S. dollars. Simultaneously, a U.S. corporation could actually be entering into a cross-currency swap in the opposite direction—"paying yen" and "receiving dollars." The swap dealer is taking the role of a middle man.

Accountants in the United States treat the currency swap as a foreign exchange transaction rather than as debt and treat the obligation to reverse the swap at some later date as a forward exchange contract. Forward exchange contracts can be matched against assets, but they are entered in a firm's footnotes rather than as balance sheet items. The result is that both translation and operating exposures are avoided, and neither a long-term receivable nor a long-term debt is created on the balance sheet. The risk of changes in currency rates to the implied collateral in a long-term currency swap can be treated with a clause similar to the maintenance-of-principal clause in a back-to-back loan. If exchange rates change by more than some specified amount, say 10%, an additional amount of the weaker currency might have to be advanced.

13. Contractual hedging. Eastman Kodak is a MNE that has undertaken contractual hedging of its operating exposure.

- a) **How do they accomplish this task?** Eastman Kodak is another MNE that has in the past undertaken contractual hedging of its operating exposure. Kodak management believes its markets are largely price-driven and is aware that its major competitor, Fuji, has a Japanese cost base. If the U.S. dollar were to strengthen in the medium to long term, Kodak's market share in the United States and in foreign markets would decline. Kodak leadership also believes that whatever sales Kodak loses, its competitors will gain. Kodak has therefore also purchased long-term put options on foreign currencies, which would replace long-term earnings if the value of the U.S. dollar rose unexpectedly.
- b) **What assumptions do they make in order to justify contractual hedging of their operating exposure?** The magnitude of the option position depends on the nature of desired replacement. For example, if Kodak wished to insure only the lost net earnings from exchange rate-induced losses, the option position would be considerably smaller than a position attempting to replace gross sales revenues. Given the premium expenses associated with long-term put option positions of this type, replacing earnings is preferred to replacing sales.
- c) **How effective is such contractual hedging in your opinion? Explain your reasoning.** A significant question remains as to the true effectiveness of hedging operating exposure with contractual hedges. The fact remains that even after feared exchange rate movements and put option position payoffs have occurred, the firm is competitively disadvantaged. The capital outlay required for the purchase of such sizeable put option positions is capital not used for the potential diversification of operations, which in the long run might have more effectively maintained the firm's global market share and international competitiveness.

MINI-CASE: TOYOTA'S EUROPEAN OPERATING EXPOSURE**1. Why do you think Toyota had waited so long to move much of its manufacturing for European sales to Europe?**

Automobile manufacturing is a very complex and capital intensive industry. Toyota, like most manufacturers, wished to continue to enjoy the benefits of scale and scope economies in manufacturing as long as possible, and had resisted the movement of more and more of its manufacturing into the local and regional markets. Time, however, was now running out.

2. If the British pound were to join the European Monetary Union would the problem be resolved? How likely do you think this is?

The British joining the EMU would eliminate the currency risk between the UK and Europe, but not between Japan and Europe. The UK joining the EMU would eliminate the deviations in currency value between the British pound and the euro only.

Although there has been continuing and heated debate over the possibility of Britain joining the EMU, there is at present no specific plan to do so. In many ways the UK believes itself to be somewhat the beneficiary of being the single large "European" country which is not euro-based.

3. If you were Mr. Shuhei, how would you categorize your problems and solutions? What was a short-term and what was a long-term problem?

The problems, at least on the basis of the data presented, appear to be primarily exchange rate-induced pricing problems. The fall in the value of the euro against the yen throughout 1999 and early 2000 was significant (for example calculate the percentage change in the value of the euro between January 1999 and July 2000). For some unknown reason most of Toyota's North American operations had moved to manufacturing bases in North America, while Toyota had continued to try and service European sales via exports from Japan. The recent decision to manufacture a new European-targeted product, the Yaris, from production in Japan was in the continuing strategy. It did not appear to be a good strategy given the recent direction of exchange rate movements.

The primary short-term solution was to continue to absorb yen-based cost increases in lower margins on European sales – assuming that the market would not bear passing-through the exchange rate changes. In the medium-to-long-term, Toyota must inevitably move more of the automobile's content into manufacturing operations within the EMU (and not the United Kingdom).

4. What measures would you recommend Toyota Europe take to resolve the continuing operating losses?

If Toyota was willing to continue incurring the operating losses in Europe, and put market share goals above profit goals, then continuing the current operating and pricing policy would be in order. The euro had regained some of its weakness against the yen in the recent year.

The fact that significant Toyota operations existed in the United Kingdom would be a continuing dilemma as long as the UK stayed out of the EMU. The strength of the pound against the euro – and the new-found stability in that rate seen in 2000 and 2001 – did not bode well for UK-based operations for European sales. In the longer-term, Toyota, like many other multinationals, would have to consider moving more of its manufacturing and cost structure to within the EMU, not in Japan and not in the UK.