

# Daytona manufacturing



**ASSIGN  
BUSTER**

Problem: Hedging using Foreign Currency Derivatives problem: Scout Finch is the Chief Financial Officer [CFO] of Dayton Manufacturing, a U. S. based manufacturer of gas turbine equipment. She has just concluded negotiations for the sale of a turbine generator to Crown, a British firm for One million pounds. This single sale is quite large in relation to Dayton's present business. Dayton has no other current foreign customers, so the currency risk of this sale is of particular concern. The sale is made in March with payment due three months later in June.

Scout Finch has collected the following financial market information for the analysis of her currency exposure problem: ? ? ? ? ? ? ? ? ? Spot Exchange rate: \$1. 7640 per British pound. Three month forward rate: \$1. 7549 per pound (a 2. 2676% p. a. discount on the pound) Dayton's cost of capital: 12% U. K. three month borrowing interest rate: 10. 0% (or 2. 5% per quarter) U. K. three month investment interest rate: 8. 0% (or 2% per quarter) U. S. three month borrowing interest rate: 8. 0% ( or 2. 0% per quarter) U. S. hree month investment interest rate: 6. 0% (or 1. 5% per quarter) June put option in the over-the-counter (bank) market for 1, 000, 000 British pounds; Strike price \$1. 75 (nearly at-the money) 1. 5% premium June put option in the over-the counter (bank) market for 1, 000, 000 British pounds: Strike price \$1. 71 (out-of-the money) 1. 0% premium Dayton's foreign exchange advisory service forecasts that the spot rate in there months will be \$1. 76 per British pound. Like many manufacturing firms, Dayton operates on relatively narrow margins. Although Ms.

Finch and Dayton would be very happy if the pound appreciated versus the dollars, concerns center on the possibility that the pound will fall. When Ms.

Finch budgeted this specific contract, she determined that the minimum acceptable margin was at a sale price of \$1, 700, 000. The budget rate, the lowest acceptable dollar per pound exchange rate, was therefore established at \$1. 70 per British pound. Any exchange rate below would result in Dayton actually losing money on the transaction. Four alternatives are available to Dayton to manage the exposure: 1. Remain un-hedged. 2. Hedge in the forward market. 3. Hedge in the money market. 4. Hedge in the options market. What should Dayton do? Answer: Hedging Schedule and Sequence

Type of Macro Risks corporations face which necessitate Hedging ? ? ?

Transaction Exposure ? Transaction cash flow sensitivity to exchange rate changes  
Economic Exposure ? MNC Firm value changes due to exchange rate changes  
Translation Exposure ? MNC Balance Sheet changes due to exchange rate changes  
Steps in Hedging Forecasting Exchange Rates and Hedging Needs: Assessing Strategic Plan Impact: To Hedge or Not to Hedge?

Should be decided by the Top Management Corporations Hedge to reduce risk/variability  
Hedging involves incurring ‘ Out-of-pocket’ costs as well as ‘ Opportunity costs’  
Information Asymmetry, Differential Transaction costs, Cost of Defaults, Planning and for corporate tax management are the main reasons for Hedging. Selecting Hedging Instrument and Choices: - Forwards - Futures - Options - Swaps - Money Market - Combinations

Constructing/Monitoring Hedging Program: ? ? Static, One time Hedging  
Cross Hedging? Hedge ratios?

Dynamic, continuous Hedging Delta Hedging. Possible Answers: OBJECTIVE of Hedging: ? Receive Maximum from Sales while minimizing downside risk.  
1. Do Not Hedge: Do Nothing Possible Consequences ? 2. Forward Market

Hedge:  $1,000,000 \times 1.7549 = \$1,754,900$  Excellent Profits or Firm

Bankrupt ? 3. Money Market Hedge: Discount Future Payment in Money

Markets in England. Get Brit. Pound 975,609.76 ?  $[1,000,000 / 1.025]$  ?

British Pounds 1,000,000 Convert this to U. S. Dollars today.  $\times 1.7640 =$

Get \$1,720,975.1; what does the Firm do with this money? Choice One: \$1,

720,975.61 ?  $[1,720,975.61 \times 1.015]$  ? 1,746,790.24 \$1,720,975.61 ?

$[1,720,975.61 \times 1.02]$  ? 1,755,395.12 \$1,720,975.61 ?  $[1,720,975.61$

$\times 1.03]$  ? 1,772,604.87 Choice Two: Choice Three: 4. Use Options: At-the-

Money-option Option Premium = [Amount of Protection]  $\times$  [Premium Cost] =

[Size of Option  $\times$  Spot Exchange Rate]  $\times$  [Premium Cost] = [British Pound 1,

000,000  $\times$  1.764]  $\times$  0.015 = \$26,460 Incorporating time value of money for

3 months at cost of capital = \$26,460  $\times$  1.3 = \$27,254 [Assumed that

Option premium cost borrowed at cost of capital] Net Proceeds: 1,750,000 -

27,254 = \$1,722,746 Out-of-the-money option: Option Premium = [Amount

of Protection]  $\times$  [Premium Cost] = [Size of Option  $\times$  Spot Exchange Rate]  $\times$

[Premium Cost] = [British Pound 1,000,000  $\times$  1.764]  $\times$  0.01 = 17,640

Incorporate Time value of money for 3 months at Cost of Capital = \$17640  $\times$

1.03 = \$18,169.20 [Assumed that Option premium cost borrowed at cost of

capital] Net Proceeds: 1,710,000 - 18169.20 = \$1,691,830.80 Exhibit 8.

The Life Span of a Transaction Exposure Time and Events t1 Seller quotes a

price to buyer (in verbal or written form) t2 Buyer places firm order with

seller at price offered at time t1 t3 Seller ships product and bills buyer

(becomes A/R) t4 Buyer settles A/R with cash in amount of currency quoted

at time t1 Quotation Exposure Backlog Exposure Billing Exposure Time

between quoting a price and reaching a contractual sale Copyright © 2004

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Time it takes to get paid in cash after A/R is issued 8-16 Exhibit 8. 5

Valuation of Cash Flows Under Hedging Alternatives for Dayton Value in US dollars of Dayton's ? 1, 000, 000 A/R 1. 84 1. 82 1. 80 1. 78 1. 76 1. 74 1. 72 1. 70 1. 68 1. 68 1. 70 1. 72 1. 74 1. 76 1. 78 1. 80 1. 82 1. 84 1. 86 8-23

Uncovered Put option strike price of \$1. 75/? OTM put option hedge ATM put option hedge Money market hedge Forward contract hedge Put option strike price of \$1. 71/? Ending spot exchange rate (US\$/? )