About this Part

This Part is focused on the economics of exchange risk and hedging. To set the scene, we look into the question whether exchange rate changes are easy to understand and predict (Chapters 10 and 11). If so, there would not be much of a problem: all predicted changes would already be built into contracts, and there would be no bad surprises. Unfortunately, it turns out that exchange-rate movements are hard to predict; worse, they are even hard to understand and explain *ex post*.

We saw in Chapter 3 that real exchange rates can move a lot, and that this is important to firms. Coupled with the finding that most of the change comes from the nominal rate and that this part is hard to predict, it seems obvious that hedging is a good idea. We have to qualify, upon reflection: our conclusion in Chapter 12 is that hedging adds value if and only if it affects the company's real operations, not just its bank account.

Given that there are many channels through which the decision whether to hedge or not may affect operations, we conclude that hedging should often be relevant. The next question then is what size the forward hedge should be. What's the amount at stake? Chapter 13 reviews the various exposure concepts. Chapter 14 shows how to quantify the remaining unhedged risks as part of all market-related risks. We conclude with a review of ways to handle credit risk and transfer risk in international trade.

The minicase that follows brings up most of the issues.

Danish Weaving Machines

This is Copenhagen, in the late afternoon of 31/12/2005. Amidst the din of popping champagne corks, you (a trainee) and three regulars (Peter, Paul, and Mary) are still working hard. This very evening your firm, Danish Weaving Machines (DWM), has to submit its bid for an international tender for the delivery of a piece of fully automated weaving equipment. The customer, Taiwan Weaving Amalgamated (TWA) has invited bids in the currency of the bidder (DKK for your firm). There is only one serious competitor, France's *Équipements de Tissage* (ET). Due to a combination of luck and intelligence work involving, among the less unspeakable things, a rather expensive lunch in Paris, you know that ET has submitted a bid of EUR 2.8m. TWA will make up its mind on 1/4/2006, and will look at the price only—your and ET's equipment are embarrassingly similar. Production and delivery take a few weeks, payment would be by a Banker's Acceptance payable on sight and drawn on TWA's bank, First National of Taiwan, under a D/A documentary credit opened by First National via an L/C confirmed by your bank, Handelsbanken. The production cost would be DKK 18m. How should you set your price?

That looks easy to Peter: "For two months in a row, the EUR has been at the bottom of the ERM band (at DKK/EUR 7.5), and it cannot go any deeper. So we set our price at DKK 20.999m, somewhat below ET's price (EUR 2.8m $\times$ 7.5 = 21m). This leaves us a nice, sure profit of DKK 2.999m." Paul disagrees. "You must be out of your mind", he shouts. "It's decidedly in the cards that the DKK will revalue soon; and bankers tell me that, if and when there is a re-alignment, then by a time-honored ERM rule it will be by the cumulative inflation differential since the last re-alignment, that is, about 8%, to DKK/EUR 6.9. Just look at these forward exchange rates in the afternoon issue of *Børsen*:

spot	30d	60d	90d	180d	360d
7.50	7.30	7.25	7.20	7.15	7.10

If that's not half-predicting a lower EUR rate, I'll eat my hat." (Knowing Paul's hat quite well, the others look awed.) "IF there is a realignment, ET would win hands down. So we should set our price at DKK 19.319", Paul concludes, "somewhat below EUR 2.8m $\times$ 6.9 = 19.32, so that we win whatever happens. This still leaves us a profit of DKK 1.319m. This profit, unlike Peter's figure, is really safe; and 1.319m in the hand is better than 2.999m in the bush."

Mary is less than fully supportive: "Proverbs are for nitwits. What's "a" bird anyway? What about two humongous birds in the bush v a tiny, scruffy specimen in the hand? That is, how do you know that the PV of the risky but potentially high-payoff bid is lower than the PV of the riskfree one? You haven't even stated what the probabilities of a devaluation are. Nor have you explained how you set the discount rate as a function of the uncertainty, and how you defined the risk."

A thoughtful silence follows (apart from the continuous popping of champagne corks, elsewhere in the office). Fortunately for Peter, Paul and Mary, at this very moment the managing director comes in and takes them into his one-horse open

sleigh to *Ensemble*, a (then) Michelin-star restaurant on Tordenskjoldsgade, thus leaving you, the trainee, with the problem. You have to fax TWA tonight, and the wrong decision would end your career at DWM.

Issues

1. What occult meanings & dark messages might be hidden in the cryptic phrase "payment would be by a Banker's Acceptance payable on sight and drawn on TWA's bank, First National of Taiwan, under a D/A documentary credit opened by First National via an L/C confirmed by your bank, Handelsbanken" ?

   Read Chapter 15 to find out. For current purposes, take this as meaning you get paid upon shipment of the machines. Using this interpretation, think of the following issues:

2. Suppose you want to reduce the uncertainty about the exchange-rate change. Is there any theory or type of information that would help reduce the uncertainty, or at least come up with a probability?

   Read Chapter 10 to find out.

3. What kind of exposure is there if we submit the high DKK price, and if we submit the low price: contractual, operating, or acccounting exposure?

4. Can one determine the size of the exposure, and, if so, what is the hedged value?

   Read Chapter 13 to find out about these two questions.

5. In choosing between the two alternatives, could any additional considerations play a role, or do we have enough information for the decision?

6. Suppose the optimal decision involves exchange risk. Does it make a difference whether you actually hedge, or is computing a hedged value as a tool in decision making all that matters?

7. Suppose that you read the Call for Tenders again, and, lo and behold, it says (in rather small print) that submitting a EUR bid is allowed.

   Your first reaction is that this does not help, since in the presence of a forward market any bid in EUR can be hedged into a DKK bid and vice versa. Then you realize that this hunch is clearly incorrect. Why? What was wrong with your initial hunch?

   Read Chapter 12 to find out about questions 5-7.

8. What would be the exposure if you submit a price in EUR, say 2.79985? What, if possible, is the hedged value? Would you use this option to quote a EUR price?

9. What does TWA gain by adding the EUR option to the Call for Tenders?

