Chapter 11

Managing Transaction Exposure

J. Gaspar: Adapted from Jeff Madura, International Financial Management
Transactions Exposure: To Manage or Not to Manage?

Once the degree of transactions exposure has been determined (by currency) with relative certainty, the next step is to figure out:

• Whether all transactions exposure should be hedged, or

• Whether transactions exposure should be hedged selectively, or

• None of the transactions exposure should be hedged at all.
Chapter Objectives

- To identify the commonly used techniques for hedging transaction exposure;
- To show how each technique can be used to hedge future payables and receivables;
- To compare the pros and cons of the different hedging techniques and determine the most appropriate one; and
- To suggest other methods of reducing exchange rate risk when traditional hedging techniques are unavailable.
Transaction Exposure

• **Transaction exposure** exists when short-term future cash transactions of a firm are affected by exchange rate fluctuations.

• When transaction exposure exists, the firm faces three major tasks:
  1. Identify its degree of transaction exposure.
  2. Decide whether to hedge this exposure.
  3. Choose a hedging technique if it decides to hedge part or all of the exposure.
Transaction Exposure

• To identify net transaction exposure, a centralized group consolidates all subsidiary reports to compute the expected net positions in each foreign currency for the entire MNC.

• Note that sometimes, a firm may be able to reduce its transaction exposure by pricing its exports in the same currency that it will use to pay for its imports.
Techniques to Eliminate Transaction Exposure

- Hedging techniques include:
  - Futures hedge,
  - Forward hedge,
  - Money market hedge, and
  - Currency option hedge.
- MNCs will normally compare the cash flows that would be expected from each hedging technique before determining which technique to apply.
Futures and Forward Hedges

- A **futures hedge** uses currency futures, while a **forward hedge** uses forward contracts, to lock in the future exchange rate.

- Recall that forward contracts are commonly negotiated for large transactions, while the standardized futures contracts tend to be used for smaller amounts.
Futures and Forward Hedges

• To hedge future payables (receivables), a firm may purchase (sell) currency futures, or negotiate a forward contract to purchase (sell) the currency forward.

• The hedge-versus-no-hedge decision can be made by comparing the known result of hedging to the possible results of remaining unhedged, and taking into consideration the firm’s degree of risk aversion.
Futures and Forward Hedges

• The **real cost of hedging** measures the additional expenses beyond those incurred without hedging.

• Real cost of hedging payables \( (RCH_p) = \text{nominal cost of payables with hedging} - \text{nominal cost of payables without hedging} \)

• Real cost of hedging receivables \( (RCH_r) = \text{nominal revenues received without hedging} - \text{nominal revenues received with hedging} \)
Futures and Forward Hedges

• If the real cost of hedging is negative, then hedging is more favorable than not hedging.

• To compute the expected value of the real cost of hedging, first develop a probability distribution for the future spot rate. Then use it to develop a probability distribution for the real cost of hedging.
## The Real Cost of Hedging for Each £ in Payables

<table>
<thead>
<tr>
<th>Probability</th>
<th>Nominal Cost With Hedging</th>
<th>Nominal Cost Without Hedging</th>
<th>Real Cost of Hedging</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>$1.40</td>
<td>$1.30</td>
<td>$0.10</td>
</tr>
<tr>
<td>10</td>
<td>$1.40</td>
<td>$1.32</td>
<td>$0.08</td>
</tr>
<tr>
<td>15</td>
<td>$1.40</td>
<td>$1.34</td>
<td>$0.06</td>
</tr>
<tr>
<td>20</td>
<td>$1.40</td>
<td>$1.36</td>
<td>$0.04</td>
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<tr>
<td>20</td>
<td>$1.40</td>
<td>$1.38</td>
<td>$0.02</td>
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<tr>
<td>15</td>
<td>$1.40</td>
<td>$1.40</td>
<td>$0.00</td>
</tr>
<tr>
<td>10</td>
<td>$1.40</td>
<td>$1.42</td>
<td>– $0.02</td>
</tr>
<tr>
<td>5</td>
<td>$1.40</td>
<td>$1.45</td>
<td>– $0.05</td>
</tr>
</tbody>
</table>

For each £ in payables, the expected RCH is given by:

\[
\text{expected } RCH = \sum P_i \times RCH_i = \$0.0295
\]
The Real Cost of Hedging for Each £ in Payables

There is a 15% chance that the real cost of hedging will be negative.
Futures and Forward Hedges

- If the forward rate is an accurate predictor of the future spot rate, the real cost of hedging will be zero.
- If the forward rate is an unbiased predictor of the future spot rate, the real cost of hedging will be zero on average.
Money Market Hedge

• A **money market hedge** involves taking a money market position to cover a future payables or receivables position.

• For payables:
  1. Borrow in the home currency (optional)
  2. Convert proceeds to foreign currency at the spot rate and invest in the foreign currency to pay off AP at maturity

• For receivables:
  1. Borrow in the foreign currency
  2. Convert amount to local currency at the spot rate and invest at home. At maturity pay off loan with foreign currency AR.
Money Market Hedge

A firm needs to pay NZ$1,000,000 in 30 days.

1. Borrows $646,766
   Exchange at $0.6500/NZ$

2. Holds NZ$995,025

3. Pays $651,293
   Effective exchange rate $0.6513/NZ$

   Borrows at 8.40% for 30 days

   Lends at 6.00% for 30 days

   3. Receives NZ$1,000,000
Money Market Hedge

A firm expects to receive S$400,000 in 90 days.

1. Borrows S$392,157
   Exchange at $0.5500/S$
   
2. Holds $215,686

Borrows at 8.00% for 90 days

3. Pays S$400,000
   Effective exchange rate $0.5489/S$

Lends at 7.20% for 90 days

3. Receives $219,568
Money Market Hedge

• If interest rate parity (IRP) holds, and transaction costs do not exist, a money market hedge will yield the same results as a forward hedge.

• This is so because the forward premium/discount on a forward rate reflects the interest rate differential between the two currencies.
Currency Option Hedge

- A currency option hedge uses currency call or put options to hedge transaction exposure.
- Since options need not be exercised, they can insulate a firm from adverse exchange rate movements, and yet allow the firm to benefit from favorable movements.
- Currency options are also useful for hedging contingent exposure.
Hedging with Currency Options

Hedging Payables with Currency Call Options
- Strike price = $1.60
- Premium = $0.04

Hedging Receivables with Currency Put Options
- Strike price = $0.50
- Premium = $0.03

Nominal Cost for each £:
- With Hedging
- Without Hedging

Nominal Income for each NZ$:
- With Hedging
- Without Hedging
# Review of Hedging Techniques

<table>
<thead>
<tr>
<th></th>
<th>To Hedge Payables</th>
<th>To Hedge Receivables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Futures hedge</strong></td>
<td>Purchase currency futures contract(s).</td>
<td>Sell currency futures contract(s).</td>
</tr>
<tr>
<td><strong>Forward hedge</strong></td>
<td>Negotiate forward contract to buy foreign currency.</td>
<td>Negotiate forward contract to sell foreign currency.</td>
</tr>
<tr>
<td><strong>Currency option hedge</strong></td>
<td>Purchase currency call option(s).</td>
<td>Purchase currency put option(s).</td>
</tr>
</tbody>
</table>
Comparison of Hedging Techniques

- Hedging techniques are compared to identify the one that minimizes payables or maximizes receivables.
- Note that the cash flows associated with currency option hedging are not known with certainty but have to be forecasted.
- Several alternative currency options with different exercise prices are also usually available.
Hedging Policies of MNCs

- In general, an MNC’s hedging policy varies with the management’s degree of risk aversion.
- An MNC may choose to hedge most of its exposure or none of its exposure.
- The MNC may also choose to hedge selectively, such as hedging only when it expects the currency to move in a certain direction.
Limitations of Hedging

- Some international transactions involve an uncertain amount of foreign currency, such that overhedging may result.
  - One solution is to hedge only the minimum known amount. Additionally, the uncertain amount may be hedged using options.
- In the long run, the continual short-term hedging of repeated transactions may have limited effectiveness too.
Limitation of Repeated Short-Term Hedging

Repeated Hedging of Foreign Payables
When the Foreign Currency is Appreciating

The forward rate often moves in tandem with the spot rate. Thus, an importer who uses one-period forward contracts continually will have to pay increasingly higher prices during a strong-foreign-currency cycle.
Hedging Long-Term Transaction Exposure

Long-Term Hedging of Foreign Payables when the Foreign Currency is Appreciating

Spot Rate
Savings from hedging
1-yr forward
2-yr forward
3-yr forward

If the hedging techniques can be applied to longer-term periods, they can more effectively insulate the firm from exchange rate risk over the long run.
Hedging Long-Term Transaction Exposure

• MNCs that can accurately estimate foreign currency cash flows for several years may use long-term hedging techniques.

   Long-term forward contracts, or long forwards, with maturities of up to five years or more, can be set up for very creditworthy customers.
Hedging Long-Term Transaction Exposure

In a currency swap, two parties, with the aid of brokers, agree to exchange specified amounts of currencies on specified dates in the future.

A parallel loan, or back-to-back loan, involves an exchange of currencies between two parties, with a promise to re-exchange the currencies at a specified exchange rate and future date.
Alternative Hedging Techniques

• Sometimes, a perfect hedge is not available (or is too expensive) to eliminate transaction exposure.

• To reduce exposure under such conditions, the firm can consider:
  • leading and lagging,
  • cross-hedging, or
  • currency diversification.
Leading and Lagging

- Leading and lagging strategies involve adjusting the timing of a payment request or disbursement to reflect expectations about future currency movements.
- Expediting a payment is referred to as leading, while deferring a payment is termed lagging.
Cross-Hedging

- When a currency cannot be hedged, another currency that can be hedged and is highly correlated may be hedged instead.
- The stronger the positive correlation between the two currencies, the more effective the cross-hedging strategy will be.
Currency Diversification

• An MNC may reduce its exposure to exchange rate movements when it diversifies its business among numerous countries.

• Currency diversification is more effective when the currencies are not highly positively correlated.