managing corporate foreign exchange risk

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learning outcomes

- Understand foreign exchange risk and how exposure is related to it
- Appreciate the value of corporate hedging
- The relation between currency exposure and firm market value
- Operating risk management

foreign exchange exposure

- Foreign exchange exposure measures the sensitivity of a firm's profitability, net cash flow, and market value to exchange rate variation
- There are three forms of foreign exchange exposure:
  - **Transaction exposure**: the settling of the outstanding obligations in foreign currency
  - **Accounting exposure**: the translation of accounts denominated in foreign currencies into home currency of the reporting entity
  - **Operating exposure**: is related to long-term future cash flows expected in the course of normal business

types of foreign exchange exposure

- ***Example*: Nissan exports cars to the U.S.**
- Transaction exposure: the strength/weakness of the US$ affects the revenue in JPY. Because Nissan incurs costs in JPY, an appreciation of US$ leads to higher income in JPY, hence higher profit in JPY
- Accounting exposure: the current JPY/$ rate is used to record the revenue. If the US$ ↑ (↓), a profit (loss) is recorded

Types of foreign exchange exposure

- Operating exposure: how Nissan competes with other car manufacturers such as General Motors (GM)
- Operating exposure can be illustrated in a chain of events: (1) A **depreciation** in the yen led to (2) **additional gross margin** for Japanese automakers, who (3) passed along some of this benefit to consumers in the form of **lower prices**, and (4) as a result of lower prices the Japanese automakers **gained market share** in the U.S., which (5) ate into unit sales at GM, which (6) **lowered GM's profits**, which (7) reduced **GM's market value**

Which exposure we manage

- Hedging is aimed at reducing exposure and therefore the associated risk
- It is generally accepted that accounting exposure does not matter if it has no impact on firm economic value
- We will find that the usual ways of managing risk are:
  - Transaction exposure – Traditional risk management products and financial derivatives
  - Operating exposure – Strategic and capital structure methods

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who should manage this risk?

- Consider a large corporation with major exposure to certain macroeconomic factors (FX rates, interest rates, commodity prices, etc.). Who should manage this risk?

1. The managers of the corporation
2. The shareholders/bondholders of the company

advantages of hedging at the portfolio level

- Suppose that shareholders invest in both Nissan and GM. When JPY depreciates, the fall in GM's share price will be offset by the gain from Nissan's share price
- Hence, portfolio diversification helps eliminate firm specific or idiosyncratic risk (i.e. Currency risk)
- Portfolio managers are experts in finance, and hence risk management. Company managers are not – it is not their competitive advantage

Modigliani-Miller proposition

- The Modigliani-Miller theorem states that risk management activities (hedging) do not change the value of the firm unless they lower the firm's taxes, affect its investment decision or can be done cheaper than individual investor's transactions
  - Total Risk = Systematic Risk + Idiosyncratic Risk
  - Required equity return depends on **systematic risk**. If hedging merely reduces the idiosyncratic risk of the firm's cash flows, hedging does not change the firm's value because investors still discount the same cash flows at the same required return

distress costs vs. hedging costs

- Contrary to the strict theoretical arguments, in the real world idiosyncratic risk within a firm can reduce its value.
- For example, suppose that a company experiences a very severe adverse event, then it may face bankruptcy or financial distress. This is an very costly process: lawyers, accountants, “fire-selling” assets,…
- Further, it is also argued that managers of high-risk firms require higher compensation than managers of low risk firms. Reducing the (total) risk of the firm may reduce executive compensation.
- This implies that there might be benefits to hedging at the corporate level

disadvantages of hedging at the corporate level

- There are some reasons why, if a corporation undertakes risk management, shareholders will view it as an actively bad thing:

1. “Agency problems”. Are you managing risk to provide shareholders with security or yourself with security?
2. Speculation vs. hedging. Are you trying to make money from speculation rather than reducing risk by hedging?
3. Have you got the internal controls and expertise to manage the potential risks that arise from trading derivatives?

currency risk and firm market value

U.S. portfolio and firm-specific exchange rate exposure

Regressions of the automotive industry for the total sample are shown using the following model:

$$r_t = \alpha + \beta^{m} R_{mt} + \sum_{i=1}^{n} \beta^{e} \Delta S_t + \varepsilon_t,$$

Firm	Intercept	Country-specific market risk	¥/$	DM/$	Adjusted R^2 (%)
U.S. portfolio	0.0028	1.0588	− 0.3413	0.3544	37.3
	(0.741)	(13.697)***	(− 1.874)*	(2.098)**	
GM	0.0012	0.9197	− 0.3335	0.5170	32.4
	(0.312)	(11.879)***	(− 2.003)**	(2.959)***	
Ford	0.0044	1.0048	− 0.2422	0.1400	31.2
	(1.072)	(9.915)***	(− 1.233)	(0.789)	
Chrysler	0.0029	1.2495	− 0.4472	0.4067	23.0
	(0.464)	(9.568)***	(− 1.436)	(1.563)	
Firm variation [*F*-test]			[0.426]	[3.572]**	

Source: Willliamson (2001), Journal of Financial Economics 59, 3, Table 2

currency risk and firm market value

Japan portfolio and firm-specific exchange rate exposure

Regressions of the automotive industry for the total sample are shown using the following model:

$$r_t = \alpha + \beta^{m} R_{mt} + \sum_{i=1}^{n} \beta^{e} \Delta S_t + \varepsilon_t,$$

Firm	Intercept	Country-specific market risk	$/¥	DM/¥	Adjusted R^2 (%)
Japanese portfolio	0.0052	1.0113	− 0.2196	− 0.1065	44.7
	(1.602)	(12.945)***	(− 1.423)	(− 0.700)	
Toyota	0.0096	0.8468	− 0.4068	0.0422	19.1
	(1.880)*	(7.343)***	(− 2.363)**	(0.213)	
Nissan	0.0036	0.8696	− 0.2487	− 0.0621	28.7
	(0.911)	(9.767)***	(− 1.736)*	(− 0.351)	
Honda	0.0068	0.9119	− 0.5234	− 0.3286	21.1
	(1.266)	(7.184)***	(− 1.817)*	(− 1.242)	

Source: Willliamson (2001), Journal of Financial Economics 59, 3, Table 3

operating hedges

- In contrast to transaction exposure, operating exposure is long-term and often difficult to identify accurately. Hence, strategic solutions (as opposed to financial derivatives) are usually appropriate
- The easiest way of doing this is to match your assets and liabilities or **natural hedging** mechanism: if revenues and costs in the same currency move in tandem, currency risk is eliminated
- Example: GM is exposed to the fluctuations of the JPY/US$ rate. GM could consider moving part of its factories to Japan to have the same cost structure as Japanese manufacturers

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Laker Airways

- Laker Airways founded by Freddie Laker in 1965
- It offered cheap transatlantic flights. Its main client base was the UK. With a British client base, its revenue was largely GBP denominated
- Its cost base – particularly the cost of fuel and the financing of its aircraft – was primarily USD denominated
- When the dollar strengthened in the early 1980s, income no longer covered costs
- It went bankrupt in 1982

Laker Airways

- Here are some options as to how Freddie Laker might have better managed his FX exposure:
- Make sure all costs are in GBP. Aircraft fuel is sold in USD, so it is unlikely that he could have transferred this cost into Sterling. However, in this case, it may have been optimal to make sure all his administrative functions were in the UK. In fact he was probably close to this anyway; little room for improvement here.
- Change his revenue source to make it more overseas based. That is, Laker could have marketed their tickets more aggressively in the United States

Laker Airways

- Changed his financing costs. In the case of Laker this was probably the easiest option. As with most airlines he would have leased his airplanes in USD. It would have been optimal to have changed the terms of his lease agreement to put payments into GBP

further readings

- ESM: Chapter 8, 10
- Allayannis and Weston, 2001, The use of foreign currency derivatives and firm market value, Review of Financial Studies 14, pp 243-276
- Brown, 2001, Managing foreign exchange risk with derivatives, Journal of Financial Economics, 60, 401-448
- Copeland and Joshi, 1996, Why derivatives don’t reduce FX risk, The McKinsey Quarterly 1
- Williamson, 2001, Exchange rate exposure and competition: evidence from the automotive industry, Journal of Financial Economics, 59 3

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