

Managing the risks of multinational operations

[Literature](#), [Russian Literature](#)



The Rationale for Hedging Currency Risk

True/False

1. In a perfect financial market, financial contracts are zero-NPV investments. ANS: True.
2. If hedging currency risk is to add value to the stakeholders of the firm, then hedging must impact either expected future cash flows or the cost of capital or both. ANS: True.
3. If financial markets are informationally efficient, then corporate financial policy is irrelevant. ANS: False. Don't confuse informational efficiency with a perfect market. Although the perfect market conditions ensure informational efficiency, informationally efficient markets can be imperfect.
4. Perfect financial markets are a necessary condition for corporate risk hedging to have value. ANS: False. Market imperfections are necessary conditions.
5. In perfect financial markets, corporate financial policy is irrelevant. ANS: True.
6. In a perfect financial market, the law of one price holds. ANS: True.
7. Equal access to perfect financial markets ensures that individual investors can replicate any financial action that the firm can take. ANS: True.
8. In perfect financial markets, corporate hedging policy has no value. ANS: True.

9. In perfect financial markets, corporate investment policy is irrelevant.

ANS: False. Firm value depends entirely on the firm's investments in a perfect financial market.

10. If corporate financial policy is to have value, then at least one of the perfect market assumptions cannot hold. ANS: True.

11. Real-world financial markets are perfect markets. ANS: False. Perfect markets are a theoretical ideal and not a practical reality.

12. Market imperfections are greater across national boundaries than within national boundaries.

ANS: True.

13. In perfect financial markets, multinational corporations have an advantage over domestic firms in financing their investments. ANS: False. The law of one price holds in perfect financial markets.

14. Multinationals have a comparative advantage over domestic firms in exploiting cross-border differences in financial markets. ANS: True.

15. Progressive taxation is a system in which larger taxable incomes receive a higher tax rate. ANS: True.

16. Tax preference items are goods that are sold on a tax-free basis. ANS: False. Tax preference items are items such as tax loss carryforwards and carrybacks and investment tax credits that are used to shield corporate taxable income from taxes.

17. A call option is an option to buy an underlying asset at a predetermined price. ANS: True.

18. A call option is an option to “ call in” or demand payment on a loan. ANS: False. A call option is an option to buy an underlying asset at a predetermined price.
19. Indirect financial distress costs are relatively unimportant for firms selling products for which quality and after-sale service are important. ANS: False. Reputation is easily eroded in these instances.
20. Managerial gamesmanship is least prevalent during financial distress. ANS: False. Gamesmanship is more prevalent during hard times.
21. Option values increase with an increase in the volatility of the underlying asset. ANS: True. 22. A decrease in the variability of firm value is good news for debt and bad news for the equity call option, other things held constant. ANS: True.
22. Corporate hedging of business risk unambiguously increases shareholder wealth when the firm is in financial distress. ANS: False. Because debtholders have first claim on corporate assets, corporate hedging of business risk helps debtholders first and may or may not help equityholders.
23. In the real world, corporate hedging policy can change expected future cash flows but is unlikely to reduce the cost of debt. ANS: False. Hedging policy can decrease the variability of firm value and can thus reduce the risk of debt and the required return charged by debtholders.
24. Direct costs of financial distress are far more important to corporate hedging decisions than are indirect costs. ANS: False. The

indirect costs of financial distress influence the activities of firms not just in bankruptcy but prior to bankruptcy as well.

25. Underinvestment occurs when debtholders refuse to invest additional capital into the firm during financial distress. ANS: False. Underinvestment occurs when equity foregoes positive-NPV investments.
26. In financial distress, equity has an incentive to take on large risks in order to increase the value of the equity call option. ANS: True.
27. In Miller-Modigliani's perfect world, the firm's optimal investment criterion is " Accept all positive-NPV projects. ANS: True.
28. In practice, management's objective is to maximize shareholder wealth. ANS: False. Managers act nominally as equity's agents but, in actuality, in their own best interests.
29. Managers have little incentive to hedge company-specific risks. ANS: False. As undiversified stakeholders, managers are concerned with both systematic and unsystematic risk.
30. Managers have an incentive to hedge their unit's transaction exposure to currency risk. ANS: True. 32. Hedging can increase firm value by reducing the costs of agency conflicts between managers and shareholders. ANS: True.
31. Exchange-traded options and futures contracts have a fixed cost per contract so that costs are proportional to the number of contracts traded. ANS: True.

32. The costs of hedging through operations are likely to be less burdensome for a large multinational corporation with diversified operations than for a small, less-diversified firm. ANS: True.

Multiple Choice

1. The perfect market assumptions include each of the following except _____. a. equal access to market prices b. equal access to costless information c. frictionless markets d. rational investors e. table governments ANS: E
2. Frictionless financial markets could have which of the following? a. agency costs b. bid-ask spreads c. brokerage fees d. government intervention e. irrational investors ANS: E
3. Which risk management guidelines in a) through d) is not recommended by the Group of Thirty Global Derivatives Study Group? a. assess the credit risk arising from derivatives activities b. combine authority over trading and bookkeeping functions into a single department c. quantify market risk under adverse market conditions and perform stress tests d. value derivatives positions at market e. all of the above are recommended ANS: B
4. Which of a) through d) is unlikely to result in a decision to hedge currency risk? a. bid-ask spreads on foreign exchange b. costs of financial distress c. differential taxes on income from different tax jurisdictions d. stakeholder game-playing e. all of the above are incentives to hedge ANS: A
5. Which of the following factors does not contribute to tax schedule convexity? a. Alternative Minimum Tax (AMT) rules in the United States

- b. progressive taxation c. sales taxes d. tax preference items e. all of the above contribute to tax schedule convexity ANS: C
6. Indirect costs of financial distress impact the firm in each of the following ways except _____. a. higher financial costs b. higher legal costs in bankruptcy c. higher operating costs d. lower revenues e. stakeholder gamesmanship ANS: B
7. Which of statements a) through c) regarding costs of financial distress is false? a. Both debt and equity unambiguously benefit from corporate risk hedging. b. Hedging can increase expected cash flows by reducing the costs of financial distress. c. Hedging can reduce debtholders' required return and hence the cost of capital to the firm. d. All of the above are ANS: True. e. None of the above are ANS: True. ANS: A
8. Which of the following was most responsible for the collapse of Barings Bank? a. bankruptcy proceedings b. failure to monitor the activities of its traders c. index arbitrage d. index futures and options trading e. the 1991 fall in share prices on the Tokyo stock exchange ANS: B
9. Management has an incentive to hedge which of the following exposures? a. operating exposure b. transaction exposure c. translation (accounting) exposure d. all of the above e. none of the above ANS: D
10. Tax schedules are said to be progressive when _____. a. the effective tax rate is greater at high levels of taxable income than at low levels b. the effective tax rate is greater at low levels of taxable income than at high levels c. they do not discriminate on the basis of race, creed, or color d. when tax rates vary by the age of the taxpayer e. none of the above ANS: A

Problems

1. In what way is equity a call option on firm value? Tax schedule convexity: progressive taxation
2. Suppose corporate income up to \$250, 000 is taxed at a rate of 25 percent. Income over \$250, 000 is taxed at 40 percent. The taxable income of Quack Poultry will be either \$200, 000 or \$300, 000 with equal probability. Quack's income variability arises entirely from an exposure to currency risk. 2 depicting tax schedule convexity in the United States. a. What is Quack's expected tax liability if it does not hedge its currency risk? b. What is Quack's expected tax liability if it is able to completely hedge its currency risk exposure and lock in taxable income of \$250, 000 with certainty? c. In what way does hedging have value for Quack Poultry? Direct and indirect costs of financial distress
3. A firm based in the United Kingdom has promised to pay bondholders ? 10, 000 in one year. The firm will be worth either ? 9, 000 or ? 19, 000 with equal probability at that time depending on the value of the dollar. The firm will be worth ? 14, 000 if it hedges against currency risk. a. Identify the values of debt and equity under unhedged and hedged scenarios assuming there are no costs of financial distress. b. Suppose the firm will incur direct bankruptcy costs of ? , 000 in bankruptcy. Identify the value of debt and of equity under both unhedged and hedged scenarios. c. In addition to the ? 1, 000 direct bankruptcy cost, suppose indirect costs reduce the asset value of the firm to either ? 6, 000 or ? 18, 000 (before the ? 1, 000 direct bankruptcy cost) with equal probability. Hedging results in firm value

of \$12,000 with certainty. Identify the value of debt and of equity under both unhedged and hedged scenarios. d. Can hedging add value to shareholders in this problem?

Problem Solutions

- If the firm's assets are worth more than that promised to debtholders, equity will exercise its option to buy the assets of the firm from the debtholders at the exercise price. If firm assets are worth less than the promised claim, equity will not exercise its option and debt assumes control of the firm. Tax schedule convexity: progressive taxation
- Expected taxes with no hedging: $(0.25)[(\$200,000)(0.25)] + (0.40)[(\$250,000)(0.25) + (\$50,000)(0.40)] = (0.25)(\$50,000) + (0.40)(\$82,500) = \$66,250$. b. Expected taxes with hedging: $(\$250,000)(0.5) = \$62,500 < \$66,250$. c. Hedging allows Quack to minimize its expected tax liability. This increase in expected future cash flows to equity results in an increase in equity value.
- If firm value is \$9,000, equity will not exercise its option to buy the firm at a price of \$10,000. In this case, equity receives nothing and debt receives \$9,000. If the firm is worth \$19,000, equity pays the bondholders \$10,000 and retains the residual \$9,000. Firm value can be broken down into $E[V_{FIRM}] = E[V_{BONDS}] + E[V_{STOCK}] = [(0.25)(\$9,000) + (0.75)(\$10,000)] + [(0.25)(\$0) + (0.75)(\$9,000)] = \$9,500 + \$4,500 = \$14,000$. Hedged, firm value can be broken down into $V_{FIRM} = V_{BONDS} + V_{STOCK} = \$10,000 + \$4,000 = \$14,000$. In the absence of costs of financial distress, the reduction in the variability of firm value results in a reduction in call option value and a \$500 shift in

value from equity to debt. b. Unhedged, firm value is decomposed as:
 $E[V_{FIRM}] = E[V_{BONDS}] + E[V_{STOCK}] = [(0.5)(9,000) + (0.5)(10,000)] + [(0.5)(0) + (0.5)(9,000)] = 9,000 + 4,500 = 13,500.$
 With hedging, $V_{FIRM} = V_{BONDS} + V_{STOCK} = 10,000 + 4,000 = 14,000.$

As in the previous example, the reduction in the variability of firm value is accompanied by a \$500 transfer of wealth from equity to debt. Hedging also avoids the deadweight \$1,000 bankruptcy cost and yields an expected gain of $(0.5)(1,000) = 500.$ In this example, debt captures the expected gain of \$500. Equity will capture some of the gain if hedging results in lower interest payments on the next round of debt. c. Unhedged, firm value is $E[V_{FIRM}] = E[V_{BONDS}] + E[V_{STOCK}] = [(0.5)(6,000) + (0.5)(10,000)] + [(0.5)(0) + (0.5)(8,000)] = 7,500 + 4,000 = 11,500.$

If the firm hedges, then $V_{FIRM} = V_{BONDS} + V_{STOCK} = 10,000 + 2,000 = 12,000.$ This is the same as b) after including indirect costs of financial distress with an expected value of $[(0.5)(9,000) + (0.5)(19,000) - 18,000] = 1,500 + 500 = 2,000.$ d. Hedging can add value to shareholders if they can negotiate lower interest payments on debt because of their hedging policies. Even in financial distress, equity could offer to renegotiate the bond contract to more evenly share the gain in firm value from hedging. In this way, they can share in any gain from reducing the probability and costs of financial distress.