



金程教育
GOLDEN FUTURE

专业·领先·增值

CFA一级培训项目——绝密攻坚计划

Corporate finance & Derivatives



Corporate Finance (1)

- An CFO has gathered the following data about two projects:

| | NPV | IRR |
|-----------|----------|--------|
| Project X | \$46,300 | 12.84% |
| Project Y | \$52,100 | 10.93% |

If the projects are mutually exclusive, the CFO should:

- A. Accept project X and reject project Y.
- B. Accept project Y and reject project X.
- C. Accept both projects.

➤ **Solution: B**

If we get conflicting decision based on the NPV and IRR methods, we should choose the one with highest NPV.

Corporate Finance (2)

- Given the following cash flows for a capital project, which is most accurate about NPV, IRR and PI of the project assuming the required rate of return is 8 percent?

| Year | 0 | 1 | 2 | 3 | 4 | 5 |
|-----------|---------|--------|--------|--------|--------|-------|
| Cash flow | -50,000 | 15,000 | 15,000 | 20,000 | 10,000 | 5,000 |

| | NPV | IRR | PI |
|----|---------|-------|-------|
| A. | \$1,905 | 10.9% | 0.381 |
| B. | \$1,905 | 26.0% | 0.381 |
| C. | \$3,379 | 10.9% | 1.068 |

Corporate Finance (2)

➤ **Solution: C.**

$$\begin{aligned} NPV &= -50,000 + 15,000/1.08 + 15,000/1.08^2 + 20,000/1.08^3 + 10,000/1.08^4 + 5,000/1.08^5 \\ &= -50,000 + 13,888.89 + 12,860.08 + 15,876.64 + 7,350.30 + 3,402.92 \\ &= -50,000 + 53,378.83 = 3,378.83 \end{aligned}$$

The IRR, found with a financial calculator, is 10.88 percent.

$$PI = 1 + \frac{NPV}{CF_0} = 1 + 3379 / 50000 = 1.068$$

Corporate Finance (3)

- Ronaldinho Inc., a Basil-based listed company with great reserve of nickel ores, is declaring its target capital structure of 40% debt and 60% capital. However, as it has few financing sources, it is estimating that it cannot maintain this target by taking on more projects. The actual target structure is as follows:

| | Carrying value | Market value | Before-tax cost |
|--------|----------------|--------------|-----------------|
| Debt | 48 million | 78 million | 8% |
| Equity | 72 million | 52 million | 15% |

As the company's tax rate is 40%, the cost of capital of the company is *closest* to:

- A. 10%.
- B. 9%.
- C. 7%.

Corporate Finance (3)

➤ Solution: B

You should use the market value of debt and equity to calculate the percentage of debt and equity in the capital structure. And then use the WACC formula to calculate the WACC. $WACC = W_d \times r_d (1 - t) + W_{ce} \times r_{ce} = 0.6 \times 8\% (1 - 0.4) + 0.4 \times 15\% = 8.89\%$

Corporate Finance (4)

- An analyst gathered the following Information about the capital structure and before-tax component costs for a company. The company's marginal tax rate is 40%.

| Capital component | Book Value (000) | Market Value(000) | Component cost |
|-------------------|------------------|-------------------|----------------|
| Debt | \$100 | \$80 | 8% |
| Preferred stock | \$20 | \$20 | 10% |
| Common stock | \$100 | \$200 | 12% |

The company's weighted average cost of capital (WACC) is *closest* to:

- A. 8.55%.
- B. 9.95%.
- C. 10.00%.

Corporate Finance (4)

➤ Solution: B

As the target capital weights are not given, you can use market value weights to compute the WACC. The market value weights for debt, preferred stock and equity are 0.2667, 0.0667, and 0.6667 respectively.

$$\text{WACC} = W_d \times r_d (1 - t) + W_p \times r_p + W_{ce} \times r_{ce}$$

$$= 0.2667 \times 8\% (1 - 0.4) + 0.0667 \times 10\% + 0.6667 \times 12\% = 9.95\%$$

Corporate Finance (5)

- Derek Ramsey is an analyst with Bullseye Corporation, a major U.S.-based discount retailer. Bullseye is considering opening new stores in Brazil and wants to estimate its cost of equity capital for this investment. Ramsey has found that: (Notes P56)
- The yield on a Brazilian government 10-year U.S. dollar-denominated bond is 7.2%.
 - A 10-year U.S. Treasury bond has a yield of 4.9%.
 - The annualized standard deviation of the Sao Paulo Bovespa stock index in the most recent year is 24%.
 - The annualized standard deviation of Brazil's U.S. dollar-denominated 10-year government bond over the last year was 18%.
 - The appropriate beta to use for the project is 1.3.
 - The market risk premium is 6%.
 - The risk-free interest rate is 4.5%.

Corporate Finance (5)

- Which of the following choices is closest to the appropriate country risk premium for Brazil and the cost of equity that Ramsey should use in his analysis?

| | Country risk premium for Brazil | Cost of equity for project |
|----|---------------------------------|----------------------------|
| A. | 2.5% | 15.6% |
| B. | 2.5% | 16.3% |
| C. | 3.1% | 16.3% |

Corporate Finance (5)

➤ Solution: C

$$\text{CRP} = \text{sovereign yield spread} \left(\frac{\text{annualized standard deviation of equity index of developing country}}{\text{annualized standard deviation of sovereign bond market in terms of the developed market currency}} \right)$$

$$= \text{spread} \times \frac{\sigma_{equity}}{\sigma_{bond}}$$

$$= (0.072 - 0.049) \left(\frac{0.24}{0.18} \right) = 0.031, \text{ or } 3.1\%$$

$$k = R_f + \beta [E(R_{mkt}) - R_f + \text{CRP}]$$

$$= 0.045 + 1.3 [0.06 + 0.031]$$

$$= 0.163, \text{ or } 16.3\%$$

Corporate Finance (6)

- Which of the following components would *most likely* consider marginal tax rate when calculating a firm's WACC?
- A. Equity
 - B. Debt
 - C. Preferred stock

➤ **Solution: B**

$$WACC = W_d \times r_d (1 - t) + W_p \times r_p + W_{ce} \times r_{ce}$$

Cost of debt needs to consider marginal tax rate.

Corporate Finance (7)

- Prestwich is investing \$250 million in new pricing equipment. The present value of the future after-tax cash flows resulting from the equipment is \$400 million. Prestwich currently has 300 million shares outstanding, with a current market price of \$20.00 per share. Assuming that this project is new information and is independent of other expectations about the company, after release the information stock price increased to \$20.25. Based on this information, which of the following statements in *most likely* accurate?
- A. The company's expected stock price increase is greater than the actual stock price increase after release the invest information,
 - B. The company's expected stock price increase is lower than the actual stock price increase after release the invest information
 - C. The company's expected stock price increase is equal to the actual stock price increase after release the invest information

Corporate Finance (7)

➤ Solution: A

Total Incremental cash inflow of this project is $400-250=\$150$ million, expected per share stock price increase is $150/300=\$0.5$, the actual stock price increase is $20.25-20.00=\$0.25$

Corporate Finance (8)

- Spencer Pharmaceuticals, Inc., (SPI) has 20,000,000 shares outstanding with a current market value of \$50 per share. SPI made \$100 million in profits for the recent quarter, and because only 70% of these profits will be reinvested back into the company, SPI's Board of Directors is considering two alternatives for distributing the remaining 30% to shareholders:
 - Pay a cash dividend of $\$30,000,000 / 20,000,000 \text{ shares} = \1.50 per share
 - Repurchase \$30,000,000 worth of common stock.
- Assume that dividends are received when the shares go ex-dividend, the stock can be repurchased at the market price of \$50 per share, and there are no differences in tax treatment between the two alternatives. Which of the following statements is most likely accurate?

Corporate Finance (8)

- A. Total wealth from the ownership of one share after pay a cash dividend is greater than after repurchase.
- B. Total wealth from the ownership of one share after pay a cash dividend is equal to after repurchase
- C. Total wealth from the ownership of one share after pay a cash dividend is lower than after repurchase

Corporate Finance (8)

➤ Solution: B

Share repurchase: With \$30,000,000, SPI could repurchase $\$30,000,000 / \$50 = 600,000$ shares of common stock. The share price after the repurchase is calculated as the market value of equity after the \$30,000,000 repurchase divided by the shares outstanding after the repurchase: total wealth from the ownership of one share = \$50

Cash dividend: After the shares go ex-dividend, a shareholder of a single share would have \$1.50 in cash and a share worth $\$50 - \$1.50 = \$48.50$. The ex-dividend value of \$48.50 can also be calculated as the market value of equity after the distribution of the \$30 million, divided by the number of shares outstanding after the dividend payment:

$$\frac{20,000,000(\cancel{\$}50) - \$30,000,000}{20,000,000} = \$48.50$$

Total wealth from the ownership of one share = $\$48.50 + \$1.50 = \$50$. So Cash dividend = share repurchase, in terms of the effect on shareholders' wealth

Corporate Finance (9)

- Which of the following statements is *most likely* refers to the effect of a pull on liquidity?
- A. A company's receipts lag, creating pressure from the decreased available funds.
 - B. A company's receipts are paid too quickly.
 - C. A company's trade credit availability is limited.

➤ **Solution: C**

A drag on liquidity is when receipts lag, creating pressure from the decreased available funds. A pull on liquidity is when disbursements are paid too quickly or trade credit availability is limited, requiring companies to expend funds before they receive funds from sales that could cover the liability.

Corporate Finance (10)

➤ Assuming a 365-day year and the following information for a company:

| | Current Year | Previous Year |
|--------------------|--------------|---------------|
| Sales | \$12,000 | \$10,000 |
| Cost of goods sold | \$6,000 | \$5,000 |
| Inventory | \$1,200 | \$1,000 |
| Accounts payable | \$600 | \$500 |

The firm's days in payables for the current year are closest to:

- A. 18.3.
- B. 35.3.
- C. 36.5.

Corporate Finance (10)

➤ Solution: B

$$\begin{aligned} \text{The days in payables} &= \frac{\text{Accounts payable}}{\text{Purchases} \div 365} = \frac{\text{Accounts payable}}{(\text{Change in inventory} + \text{Cost of goods sold}) \div 365} \\ &= \frac{\$600}{(\$1200 - \$1000 + \$6000) \div 365} = 35.3 \end{aligned}$$

Corporate Finance (11)

- Given the following financial statement data, calculate the number of days of receivables for this company.

| | In Millions (\$) |
|-----------------------------|------------------|
| Credit sales | 40,000 |
| Cost of goods sold | 30,000 |
| Accounts receivable | 3,000 |
| Inventory–Beginning balance | 1,500 |
| Inventory–Ending balance | 2,000 |
| Accounts payable | 4,000 |

The number of days of receivables for this company is closest to:

- A. 24.3 days.
- B. 27.4 days.
- C. 51.7 days.

Corporate Finance (11)

➤ **Solution: B**

Number of days of inventory = $\$2,000 / (\$30,000/365) = 24.333$ days

Number of days of receivables = $\$3,000 / (\$40,000/365) = 27.375$ days

Corporate Finance (12)

- Which of the following would *least likely* consistent with good corporate governance?
 - A. Allowing shareowners the right to vote their shares by proxy.
 - B. Ensuring that a majority of the members of the audit committee are independent members of the board.
 - C. Requiring a supermajority to pass shareowner resolutions and a simple majority to pass board or management sponsored initiatives.

➤ **Solution: C**

The ability of shareowners to propose corporate initiatives can “prevent erosion of shareowner value”. However, forcing shareowner initiatives to pass by a supermajority rather than a simple majority places such initiatives at a disadvantage to board or management sponsored initiatives if the latter require only a simple majority to pass.

Corporate Finance (13)

- Which of the following would *most likely* be considered a *good* corporate practice in terms of promoting shareholder interests?
 - A. Proxy voting
 - B. Staggered board
 - C. Unclassified Voting

➤ **Solution: A**

Proxy voting will increase the probabilities to represent the shareholders' right. Staggered board is a kind of pre-offer takeover defense mechanism. Confidential (not unclassified) voting ensures all votes are counted equally and less influenced by insiders

Corporate Finance (14)

- With regard to capital budgeting, an appropriate estimate of the incremental cash flows from a project is least likely to include:
 - A. Externalities.
 - B. Interest costs.
 - C. Opportunity costs.

➤ **Solution: B**

Costs to finance the project are taken into account when the cash flows are discounted at the appropriate cost of capital; including interest costs in the cash flows would result in double-counting the cost of debt.

Corporate Finance (15)

➤ Motors now sells 1 million units at ¥ 3,529 per unit. Fixed operating costs are ¥ 1,290 million and variable operating costs are ¥ 1,500 per unit. If the company pays ¥410 million in interest, the levels of sales at the operating breakeven point is:

- A. ¥ 1,500,000,000
- B. ¥ 2,243,671,760
- C. ¥ 2,975,148,800

➤ **Solution: B**

$$\text{Operating breakeven units} = \frac{\text{¥1290million}}{(3,529 - 1,500)} = \text{¥635,781.173 units}$$

$$\text{Operating breakeven sales} = \text{¥ 3,529} \times \text{¥ 635,781.173} - \text{¥ 1,500} \times \text{¥ 635,781.173} = \text{¥ 2,243,671,760}$$

Corporate Finance (16)

- Jacobs, Inc., sells blue ink for \$4 a bottle. The ink's variable cost per bottle is \$2. Ink has fixed operating costs of \$4,000 and fixed financing costs of \$6,000. What is Jacobs' breakeven quantity of sales, in units?
- A. 2,000.
 - B. 3,000.
 - C. 5,000.

➤ **Solution: C**

$$Q_{BE} = \frac{\$4,000 + \$6,000}{\$4 - \$2} = 5,000$$

Corporate Finance (17)

- Jayco, inc., sells 10,000 units at a price of \$5 per unit. Jayco's fixed costs are \$8,000, interest expense is \$2,000, and variable costs are \$3 per unit. Jayco's degree of total leverage (DTL) is *closest* to:
- A. 2.00
 - B. 1.75
 - C. 1.5

➤ **Solution: A**

$$DTL = \frac{Q(P - V)}{[Q(P - V) - F - I]} = \frac{10,000(5 - 3)}{[10,000(5 - 3) - 8,000 - 2,000]} = 2$$

Corporate Finance (18)

- A firm has an after-tax cost of debt of 5%, a cost of equity of 9%, and earns 1% on its surplus cash. A share repurchase will increase the company's earnings per share when the repurchase is funded with: (Notes P129)
- A. Debt, and the earnings yield is less than 5%.
 - B. Debt, and the company's earnings yield is greater than 5%.
 - C. Surplus cash, and the repurchase price is greater than the company's book value per share.

➤ **Solution: B**

Using the company's cash to repurchase shares will increase earnings per share because it reduces the number of shares outstanding, and the yield on the surplus cash is less than the firm's cost of capital. A repurchase funded by debt will increase EPS only if the cost of debt is less than the company's earnings yield (EPS / share price).

Corporate Finance (19)

- Which of the following is the *most* reliable source of short-term financing from banks?
- A. Uncommitted line of credit.
 - B. Committed line of credit.
 - C. Revolving line of credit.

➤ **Solution: C**

For uncommitted line of credit, a bank extends an offer of credit for a certain amount but may refuse to lend if circumstances change. Although the bank committed to extend credit in amounts up to the credit line makes committed line of credit a more reliable source of short-term funding than an uncommitted line of credit, revolving line of credit is an even more reliable source of short-term financing than a committed line of credit.

Derivatives (1)

- A researcher finds that the price of one futures contract reached historical high at today, and the futures contract is marked to market daily. Which of the following statements is most accurate? After today's settlement the value of the futures is:
- A. No change
 - B. Lower than yesterday
 - C. Higher than yesterday

➤ **Solution: A**

Futures contract is marked to market daily, future value will not change after settlement.

Derivatives (2)

- Jonson's portfolio only has a long position of stock, which of the following position will *most likely* be added if Jonson wants to reduce both the portfolio's return and risk?
 - A. short put;
 - B. long put;
 - C. long call

- **Solution: B**

A long position of a stock plus a long put will reduce both return and risk; Long a put option not merely needs to pay option fee but also can hedge risk for a portfolio which only has long position of stocks; Short a put option can increase return from option fee when stock price increase, and increase risk when stock price decrease; Long a call option will reduce return when stock price decrease, while increase return when stock price decrease.

Derivatives (3)

- Which of the follow statements about the maximum profit of a covered call position is most likely accurate?
- A. Initial stock price minus initial call option premium
 - B. Strike price of call option minus initial stock price plus initial call option premium
 - C. It doesn't have a maximum profit

➤ **Solution: B**

The maximum profit of a covered call option is $X - S_0 + c$

Derivatives (4)

- Which of the following statements about derivatives is *least likely accurate*?
 - A. The buyer of a call option has the obligation to buy the underlying assets in the future under certain conditions
 - B. The seller of a forward has the obligation to sell the underlying assets in the future under certain conditions
 - C. The buyer of a futures has the right to buy the underlying assets in the future under certain conditions

➤ **Solution: A**

The buyer of a call option has the right, not obligation, to buy the underlying assets in the future under certain conditions. The seller and buyer of forward or futures has symmetrical obligation and right.

Derivatives (5)

- Which of the following statements is *most likely* accurate about pricing a swap?

The swap price:

- A. Is zero at the initiation.
- B. Fluctuates over the life of the contract.
- C. Is determined at initiation by replication.

- **Solution: C.**

Replication is the key to pricing a swap. The swap price is determined at the initiation by replication. The value (not the price) of the swap is typically zero at initiation and the fixed swap price is typically determined such that the value of the swap will be zero at initiation.

Derivatives (6)

- 90-day European call and put options with a strike price of \$45 is priced at \$7.50 and \$3.70. The underlying is priced at \$48 and makes no cash payments during the life of the options. The risk-free rate is 5%. What is the no-arbitrage price of the call option and whether the call option is overpriced or not?
- A. No-arbitrage price of the call option is 7.24, overpriced.
 - B. No-arbitrage price of the call option is 7.24, underpriced .
 - C. No-arbitrage price of the call option is 7.63, underpriced.

➤ **Solution: C**

$C_0 = P_0 + S_0 - X/(1+R_f)^T = \$3.70 + \$48 - \$45/1.05^{90/365} = \$7.24 < \7.5 , so the call is overpriced.

Derivatives (7)

- A put option with an exercise price of 75 will expire in 73 days. No cash payments will be made by the underlying asset over the life of the option. If the underlying asset is at 70 and the risk-free rate of return is 5.0 percent, which of the following *most likely* correct about the relationship between the lower bound for an American put option and a European put option?
- A. The lower bound for an American put option is greater than the lower bound for a European put option
 - B. The lower bound for an American put option is equal to the lower bound for a European put option
 - C. The lower bound for an American put option is lower than the lower bound for a European put option

Derivatives (7)

➤ Solution: A

When valuing European puts that have time left until expiration, the lower bound must reflect the fact that exercise is delayed until expiration date. That is, with a European put one can't recognize the current intrinsic value, but must wait until expiration. This delay in receiving payment for selling (putting) the stock to the writer has a cost. The lower bound will therefore be below the intrinsic value (but never negative). This can be confirmed by applying the formula $P_0 \geq \text{Max}[0, X/(1+\text{RFR})^T - S_0]$. In this problem, the lower bound is the greater of 0 or $75/(1.05)^{0.2} - 70 = 4.27$. Regarding the American put, as one can recognize the intrinsic value of an American put immediately if one chooses to, the lower bound of an American put, in the absence of intervening cash payments on the underlying asset, will simply be equal to the intrinsic value.

Derivatives (8)

- Which of the following sensitive factors is negatively related with put option?
 - A. Volatility
 - B. Risk-free rate
 - C. Strike price

➤ **Solution: B**

Following factors are negatively related with put option: Underlying price; Risk-free rate; Carrying cost. Following factors are positively related with put option: Volatility; Time to expiration; Strike price; Payments on the underlying.

Derivatives (9)

➤ What is the profit from selling a call?

A. $\text{Max}[0, S_t - X]$

B. $-\text{Max}(0, S - X) + c$

C. $\text{Max}[0, X - S_t]$

➤ **Solution: B**

Profit from selling a call is option premium minus value at expiration, $-\text{max}(0, S - X) + c$.

Derivatives (10)

- An Investor purchases a stock at \$60 and at the same time, sells a 3-month call on the stock. The short call has a strike price of \$65 and a premium of \$3.60. The risk-free rate is 4%. The breakeven underlying stock price at expiration is *closest* to:
- A. \$55.85
 - B. \$56.40
 - C. \$60.80

➤ **Solution: B**

A covered call breakeven price equals the price paid for the stock less the premium received for the call. Breakeven = $(S - c) = (60 - 3.60) = \56.40 .

Derivatives (11)

- Which of the following has the most potential profit?
 - A. Protective put
 - B. Covered call
 - C. Long position with put option

➤ **Solution: A**

A protective put has the same shape profit diagram as a long call. A covered call has the same shape profit diagram as a short put. Only long call position has the most potential profit.

Derivatives (12)

- Which of the following have the largest counterparty risk?
 - A. Option
 - B. Forward
 - C. Futures

- **Solution: B**

Forward contracts are traded on over-the-counter markets. They are largely unregulated markets and each contract is with a counterparty, which may expose the owner of a derivative to default risk.