Chapter 18
Valuation and Capital Budgeting for the Levered Firm

Multiple Choice Questions

1. The flow-to-equity (FTE) approach in capital budgeting is defined to be the:
A. discounting all cash flows from a project at the overall cost of capital.
B. scale enhancing discount process.
C. discounting of the levered cash flows to the equity holders for a project at the required return on equity.
D. dividends and capital gains that may flow to a shareholders of any firm.
E. discounting of the unlevered cash flows of a project from a levered firm at the WACC.

2. The acronym APV stands for:
A. applied present value.
B. all purpose variable.
C. accepted project verified.
D. adjusted present value.
E. applied projected value.

3. A leveraged buyout (LBO) is when a firm is acquired by:
A. a small group of management with equity financing.
B. a small group of equity investors financing the majority of the price by debt.
C. any group of equity investors when the majority is financed with preferred stock.
D. any group of investors for the assets of the corporation.
E. None of the above.

4. Discounting the unlevered after tax cash flows by the _____ minus the _____ yields the _____.
A. cost of capital for the unlevered firm; initial investment; adjusted present value.
B. cost of equity capital; initial investment; project NPV.
C. weighted cost of capital; fractional equity investment; project NPV.
D. cost of capital for the unlevered firm; initial investment; all-equity net present value.
E. None of the above.

5. The acceptance of a capital budgeting project is usually evaluated on its own merits. That is, capital budgeting decisions are treated separately from capital structure decisions. In reality, these decisions may be highly interwoven. This may result in:
A. firms rejecting positive NPV, all equity projects because changing to a capital structure with debt will always create negative NPV.
B. never considering capital budgeting projects on their own merits.
C. corporate financial managers first checking with their investment bankers to determine the best type of capital to raise before valuing the project.
D. firms accepting some negative NPV all equity projects because changing the capital structure adds enough positive leverage tax shield value to create a positive NPV.
E. firms never changing the capital structure because all capital budgeting decisions will be subsumed by capital structure decisions.

6. The APV method is comprised of the all equity NPV of a project and the NPV of financing effects. The four side effects are:
A. tax subsidy of dividends, cost of issuing new securities, subsidy of financial distress and cost of debt financing.
B. cost of issuing new securities, cost of financial distress, tax subsidy of debt and other subsidies to debt financing.
C. cost of issuing new securities, cost of financial distress, tax subsidy of dividends and cost of debt financing.
D. subsidy of financial distress, tax subsidy of debt, cost of other debt financing and cost of issuing new securities.
E. None of the above.

7. In calculating the NPV using the flow-to-equity approach the discount rate is the:
A. all equity cost of capital.
B. cost of equity for the levered firm.
C. all equity cost of capital minus the weighted average cost of debt.
D. weighted average cost of capital.
E. all equity cost of capital plus the weighted average cost of debt.

8. The appropriate cost of debt to the firm is:
A. the weighted cost of debt after tax.
B. the levered equity rate.
C. the market borrowing rate after tax.
D. the coupon rate pre-tax.
E. None of the above.

9. Although the three capital budgeting methods are equivalent, they all can have difficulties making computation impossible at times. The most useful methods or tools from a practical standpoint are:
A. APV because debt levels are unknown in future years.
B. WACC because projects have constant risk and target debt to value ratios.
C. Flow-to-equity because of constant risk and that managers think in terms of optimal debt to equity ratios.
D. Both A and B.
E. Both B and C.

10. The APV method to value a project should be used when the:
A. project's level of debt is known over the life of the project.
B. project's target debt to value ratio is constant over the life of the project.
C. project's debt financing is unknown over the life of the project.
D. Both A and B.
E. Both B and C.

11. In order to value a project which is not scale enhancing you need to:
A. typically calculate the equity cost of capital using the risk adjusted beta of another firm in the industry before calculating the WACC.
B. typically increase the beta of another firm in the same line of business and then calculate the discount rate using the SML.
C. typically you can simply apply your current cost of capital.
D. discount at the market rate of return since the project will diversify the firm to the market.
E. typically calculate the equity cost of capital using the risk adjusted beta of another firm in another industry before calculating the WACC.

12. Which capital budgeting tools, if properly used, will yield the same answer?
A. WACC, IRR, and APV
B. NPV, IRR, and APV
C. NPV, APV and Flow to Debt
D. NPV, APV and WACC
E. APV, WACC, and Flow to Equity

13. The flow-to-equity approach to capital budgeting is a three step process of:
A. calculating the levered cash flow, the cost of equity capital for a levered firm, then adding the interest expense when the cash flows are discounted.
B. calculating the unlevered cash flow, the cost of equity capital for a levered firm, and then discounting the unlevered cash flows.
C. calculating the levered cash flow after interest expense and taxes, the cost of equity capital for a levered firm, and then discounting the levered cash flows by the cost of equity capital.
D. calculating the levered cash flow after interest expense and taxes, the cost of equity capital for a levered firm, and then discounting the levered cash flows at the risk free rate.
E. None of the above.

14. The term (B x rb) gives the:
A. cost of debt interest payments per year.
B. cost of equity dividend payments per year.
C. unit cost of debt.
D. unit cost of equity.
E. weighted average cost of capital.

15. The weighted average cost of capital is determined by:
A. multiplying the weighted average after tax cost of debt by the weighted average cost of equity.
B. adding the weighted average before tax cost of debt to the weighted average cost of equity.
C. adding the weighted average after tax cost of debt to the weighted average cost of equity.
D. dividing the weighted average before tax cost of debt by the weighted average cost of equity.
E. dividing the weighted average after tax cost of debt by the weighted average cost of equity.

16. A key difference between the APV, WACC, and FTE approaches to valuation is:
A. how the unlevered cash flows are calculated.
B. how the ratio of equity to debt is determined.
C. how the initial investment is treated.
D. whether terminal values are included or not.
E. how debt effects are considered; i.e. the target debt to value ratio and the level of debt.

17. Using APV, the analysis can be tricky in examples of:
A. tax subsidy to debt.
B. interest subsidy.
C. flotation costs.
D. All of the above.
E. Both A and C.

18. To calculate the adjusted present value, one will:
A. multiply the additional effects by the all equity project value.
B. add the additional effects of financing to the all equity project value.
C. divide the project's cash flow by the risk-free rate.
D. divide the project's cash flow by the risk-adjusted rate.
E. add the risk-free rate to the market portfolio when B equals 1.

19. Flotation costs are incorporated into the APV framework by:
A. adding them into the all equity value of the project.
B. subtracting them from the all equity value of the project.
C. incorporating them into the WACC.
D. disregarding them.
E. None of the above.

20. Non-market or subsidized financing _____ the APV _____.
A. has no impact on; as the lower interest rate is offset by the lower discount rate
B. decreases; by decreasing the NPV of the loan
C. increases; by increasing the NPV of the loan
D. has no impact on; as the tax deduction is not allowed with any government supported financing
E. None of the above

21. What are the three standard approaches to valuation under leverage?
A. CAPM, SML, and CML
B. APR, FTE, and CAPM
C. APT, WACC, and CAPM
D. APV, FTE, and WACC
E. NPV, IRR, Payback

22. The non-market rate financing impact on the APV is:
A. calculated by Tc B because the tax shield depends only on the amount of financing.
B. calculated by subtracting the all equity NPV from the FTE NPV.
C. irrelevant because it is always less than the market financing rate.
D. calculated by the NPV of the loan using both debt rates.
E. None of the above.

23. Which of the following are guidelines for the three methods of capital budgeting with leverage?
A. Use APV if project's level of debt is known over the life of the project.
B. Use APV if project's level of debt is unknown over the life of the project.
C. Use FTE or WACC if the firm's target debt-to-value ratio applies to the project over its life.
D. Both A and C.
E. Both B and C.

24. An appropriate guideline to adopt when determining the valuation formula to use is:
A. never use the APV approach.
B. use APV if the project is far different from scale enhancing.
C. use WACC if the project is close to being scale enhancing.
D. Both A and C.
E. Both B and C.

25. In a leveraged buyout, the equity holders expect a successful buyout if:
A. the firm generates enough cash to serve the debt in early years.
B. the company can be taken public or sold in 3 to 7 years.
C. the company is attractive to buyers as the buyout matures.
D. All of the above.
E. None of the above.

26. The WACC approach to valuation is not as useful as the APV approach in leveraged buyouts because:
A. there is greater risk with a LBO.
B. the capital structure is changing.
C. there is no tax shield with the WACC.
D. the value of the levered and unlevered firms are equal.
E. the unlevered and levered cash flows are separated which cannot be used with the WACC approach.

27. The value of a corporation in a levered buyout is composed of which following four parts:
A. unlevered cash flows and interest tax shields during the debt paydown period, unlevered terminal value, and asset sales.
B. unlevered cash flows and interest tax shields during the debt paydown period, unlevered terminal value and interest tax shields after the paydown period.
C. levered cash flows and interest tax shields during the debt paydown period, levered terminal value and interest tax shields after the paydown period.
D. levered cash flows and interest tax shields during the debt paydown period, unlevered terminal value and interest tax shields after the paydown period.
E. asset sales, unlevered cash flows during the paydown period, interest tax shields and unlevered terminal value.

28. If the WACC is used in valuing a leveraged buyout, the:
A. WACC remains constant because of the final target debt ratio desired.
B. flotation costs must be added to the total UCF.
C. WACC must be recalculated as the debt is repaid and the cost of capital changes.
D. tax shields of debt are not available because the corporation is no longer publicly traded.
E. None of the above.

29. The flow-to-equity approach has been used by the firm to value their capital budgeting projects. The total investment cost at time 0 is $640,000. The company uses the flow-to-equity approach because they maintain a target debt to value ratio over project lives. The company has a debt to equity ratio of 0.5. The present value of the project including debt financing is $810,994. What is the relevant initial investment cost to use in determining the value of the project?
A. $170,994
B. $267,628
C. $372,372
D. $543,366
E. $640,000

30. A firm has a total value of $500,000 and debt valued at $300,000. What is the weighted average cost of capital if the after tax cost of debt is 9% and the cost of equity is 14%?
A. 7.98%
B. 10.875%
C. 11.000%
D. 12.125%
E. It is impossible to determine WACC without debt and equity betas.

31. The Felix Filter Corp. maintains a debt-equity ratio of .6. The cost of equity for Richardson Corp. is 16%, the cost of debt is 11% and the marginal tax rate is 30%. What is the weighted average cost of capital?
A. 8.38%
B. 11.02%
C. 12.89%
D. 13.00%
E. 14.12%

32. The Webster Corp. is planning construction of a new shipping depot for its single manufacturing plant. The initial cost of the investment is $1 million. Efficiencies from the new depot are expected to reduce costs by $100,000 forever. The corporation has a total value of $60 million and has outstanding debt of $40 million. What is the NPV of the project if the firm has an after tax cost of debt of 6% and a cost equity of 9%?
A. $428,571
B. $444,459
C. $565,547
D. $1,000,000
E. None of the above is the correct NPV.

33. The Tip-Top Paving Co. has an equity cost of capital of 16.97%. The debt to value ratio is .6, the tax rate is 34%, and the cost of debt is 11%. What is the cost of equity if Tip-Top was unlevered?
A. 0.08%
B. 3.06%
C. 14.0%
D. 16.97%
E. None of the above.

34. The Tip-Top Paving Co. wants to be levered at a debt to value ratio of .6. The cost of debt is 11%, the tax rate is 34%, and the cost of equity for an all equity firm is 14%. What will be Tip-Top's cost of equity?
A. 0.08%
B. 3.06%
C. 14.0%
D. 16.97%
E. None of the above.

35. The Tip-Top Paving Co. has a beta of 1.11, a cost of debt of 11% and a debt to value ratio of .6. The current risk free rate is 9% and the market rate of return is 16.18%. What is the company's cost of equity capital?
A. 7.97%
B. 8.96%
C. 16.97%
D. 17.96%
E. 26.96%

36. The Telescoping Tube Company is planning to raise $2,500,000 in perpetual debt at 11% to finance part of their expansion. They have just received an offer from the Albanic County Board of Commissioners to raise the financing for them at 8% if they build in Albanic County. What is the total added value of debt financing to Telescoping Tube if their tax rate is 34% and Albanic raises it for them?
A. $850,000
B. $1,200,000
C. $1,300,000
D. $1,650,000
E. There is no value to the scheme; Albanic is just conning Telescoping Tube into moving.

37. The BIM Corporation has decided to build a new facility for its R&D department. The cost of the facility is estimated to be $125 million. BIM wishes to finance this project using its traditional debt-equity ratio of 1.5. The issue cost of equity is 6% and the issue cost of debt is 1%. What is the total flotation cost?
A. $0.75 million
B. $1.29 million
C. $3.19 million
D. $3.75 million
E. $8.75 million

38. A very large firm has a debt beta of zero. If the cost of equity is 11%, and the risk-free rate is 5%, the cost of debt is:
A. 5%
B. 6%
C. 11%
D. 15%
E. It is impossible to tell without the expected market return.

39. The Free-Float Company, a company in the 36% tax bracket, has riskless debt in its capital structure which makes up 40% of the total capital structure, and equity is the other 60%. The beta of the assets for this business is .8 and the equity beta is:
A. 0.53
B. 0.73
C. 0.80
D. 1.14
E. 1.47

40. The Delta Company has a capital structure of 20% risky debt with a β of .9 and 80% equity with a β of 1.7. Their current tax rate is 34%. What is the β for Delta Company?
A. 0.59
B. 0.82
C. 1.06
D. 1.49
E. 1.54

41. A firm is valued at $6 million and has debt of $2 million outstanding. The firm has an equity beta of 1.8 and a debt beta of .42. The beta of the overall firm is:
A. 1.00
B. 1.11
C. 1.20
D. 1.34
E. It is impossible to determine with the information given.

42. Brad's Boat Company, a company in the 40% tax bracket, has riskless debt in its capital structure which makes up 30% of the total capital structure, and equity is the other 70%. The beta of the assets for this business is .9 and the equity beta is:
A. 0.54
B. 0.90
C. 1.13
D. 1.20
E. 1.49

43. The Delta Company has a capital structure of 30% risky debt with a β of 1.1 and 70% equity with a β of 1.4. Their current tax rate is 30%. What is the β for Delta Company?
A. 0.95
B. 1.00
C. 1.10
D. 1.31
E. 1.40

44. A firm is valued at $8 million and has debt of $2 million outstanding. The firm has an equity beta of 1.5 and a debt beta of .60. The beta of the overall firm is:
A. 0.600
B. 1.155
C. 1.275
D. 1.500
E. None of the above.

Essay Questions

45. A loan of $10,000 is issued at 15% interest. Interest on the loan is to be repaid annually for 5 years, and the non-amortized principal is due at the end of the fifth year. Calculate the NPV of the loan if the company's tax rate is 34%.

46. The Azzon Oil Company is considering a project that will cost $50 million and have a year-end after-tax cost savings of $7 million in perpetuity. Azzon's before tax cost of debt is 10% and its cost of equity is 16%. The project has risk similar to that of the operation of the firm, and the target debt-equity ratio is 1.5. What is the NPV for the project if the tax rate is 34%?

47. Quick-Link has debt outstanding with a market value of $200 million, and equity outstanding with a market value of $800 million. Quick-Link is in the 34% tax bracket, and its debt is considered risk free. Merrill Lynch has provided an equity beta of 1.50. Given a risk free rate of 3% and an expected market return of 12%, calculate the discount rate for a scale enhancing project in the hypothetical case that Quick-Link is all equity financed.

48. A project has a NPV, assuming all equity financing, of $1.5 million. To finance the project, debt is issued with associated flotation costs of $60,000. The flotation costs can be amortized over the project's 5 year life. The debt of $10 million is issued at 10% interest, with principal repaid in a lump sum at the end of the fifth year. If the firm's tax rate is 34%, calculate the project's APV.

49. The all equity cost of capital for flat Rock Grinding is 15% and the company has set a target debt to value ratio of 50%. The current cost of debt for a firm of this risk is 10% and the corporate tax rate is 34%. Calculate the WACC for the Flat Rock Grinding Corporation.

50. Kelly Industries is given the opportunity to raise $5 million in debt through a local government subsidized program. While Kelly would be required to pay 12% on its debt issues, the Hampton County program sets the rate at 9%. If the debt issue expires in 4 years, calculate the NPV of this financing decision.

51. Discuss the adjusted present value, the flow to equity and the weighted average cost of capital methods of capital budgeting with leverage and the guidelines for using each method.

Chapter 18 Valuation and Capital Budgeting for the Levered Firm Answer Key

Multiple Choice Questions

1. The flow-to-equity (FTE) approach in capital budgeting is defined to be the:
A. discounting all cash flows from a project at the overall cost of capital.
B. scale enhancing discount process.
C. discounting of the levered cash flows to the equity holders for a project at the required return on equity.
D. dividends and capital gains that may flow to a shareholders of any firm.
E. discounting of the unlevered cash flows of a project from a levered firm at the WACC.

Difficulty level: Challenge
Topic: FLOW-TO-EQUITY APPROACH
Type: DEFINITIONS

2. The acronym APV stands for:
A. applied present value.
B. all purpose variable.
C. accepted project verified.
D. adjusted present value.
E. applied projected value.

Difficulty level: Easy
Topic: APV
Type: DEFINITIONS

3. A leveraged buyout (LBO) is when a firm is acquired by:
A. a small group of management with equity financing.
B. a small group of equity investors financing the majority of the price by debt.
C. any group of equity investors when the majority is financed with preferred stock.
D. any group of investors for the assets of the corporation.
E. None of the above.

Difficulty level: Easy
Topic: LEVERAGED BUYOUT
Type: DEFINITIONS

4. Discounting the unlevered after tax cash flows by the _____ minus the _____ yields the _____.
A. cost of capital for the unlevered firm; initial investment; adjusted present value.
B. cost of equity capital; initial investment; project NPV.
C. weighted cost of capital; fractional equity investment; project NPV.
D. cost of capital for the unlevered firm; initial investment; all-equity net present value.
E. None of the above.

Difficulty level: Medium
Topic: ALL EQUITY NET PRESENT VALUE
Type: CONCEPTS

5. The acceptance of a capital budgeting project is usually evaluated on its own merits. That is, capital budgeting decisions are treated separately from capital structure decisions. In reality, these decisions may be highly interwoven. This may result in:
A. firms rejecting positive NPV, all equity projects because changing to a capital structure with debt will always create negative NPV.
B. never considering capital budgeting projects on their own merits.
C. corporate financial managers first checking with their investment bankers to determine the best type of capital to raise before valuing the project.
D. firms accepting some negative NPV all equity projects because changing the capital structure adds enough positive leverage tax shield value to create a positive NPV.
E. firms never changing the capital structure because all capital budgeting decisions will be subsumed by capital structure decisions.

Difficulty level: Easy
Topic: CAPITAL BUDGETING AND CAPITAL STRUCTURE
Type: CONCEPTS

6. The APV method is comprised of the all equity NPV of a project and the NPV of financing effects. The four side effects are:
A. tax subsidy of dividends, cost of issuing new securities, subsidy of financial distress and cost of debt financing.
B. cost of issuing new securities, cost of financial distress, tax subsidy of debt and other subsidies to debt financing.
C. cost of issuing new securities, cost of financial distress, tax subsidy of dividends and cost of debt financing.
D. subsidy of financial distress, tax subsidy of debt, cost of other debt financing and cost of issuing new securities.
E. None of the above.

Difficulty level: Medium
Topic: SIDE EFFECTS OF APV
Type: CONCEPTS

7. In calculating the NPV using the flow-to-equity approach the discount rate is the:
A. all equity cost of capital.
B. cost of equity for the levered firm.
C. all equity cost of capital minus the weighted average cost of debt.
D. weighted average cost of capital.
E. all equity cost of capital plus the weighted average cost of debt.

Difficulty level: Medium
Topic: FLOW-TO-EQUITY APPROACH
Type: CONCEPTS

8. The appropriate cost of debt to the firm is:
A. the weighted cost of debt after tax.
B. the levered equity rate.
C. the market borrowing rate after tax.
D. the coupon rate pre-tax.
E. None of the above.

Difficulty level: Easy
Topic: COST OF DEBT
Type: CONCEPTS

9. Although the three capital budgeting methods are equivalent, they all can have difficulties making computation impossible at times. The most useful methods or tools from a practical standpoint are:
A. APV because debt levels are unknown in future years.
B. WACC because projects have constant risk and target debt to value ratios.
C. Flow-to-equity because of constant risk and that managers think in terms of optimal debt to equity ratios.
D. Both A and B.
E. Both B and C.

Difficulty level: Challenge
Topic: CAPITAL BUDGETING METHODS
Type: CONCEPTS

10. The APV method to value a project should be used when the:
A. project's level of debt is known over the life of the project.
B. project's target debt to value ratio is constant over the life of the project.
C. project's debt financing is unknown over the life of the project.
D. Both A and B.
E. Both B and C.

Difficulty level: Challenge
Topic: APV
Type: CONCEPTS

11. In order to value a project which is not scale enhancing you need to:
A. typically calculate the equity cost of capital using the risk adjusted beta of another firm in the industry before calculating the WACC.
B. typically increase the beta of another firm in the same line of business and then calculate the discount rate using the SML.
C. typically you can simply apply your current cost of capital.
D. discount at the market rate of return since the project will diversify the firm to the market.
E. typically calculate the equity cost of capital using the risk adjusted beta of another firm in another industry before calculating the WACC.

Difficulty level: Challenge
Topic: PROJECT VALUATION
Type: CONCEPTS

12. Which capital budgeting tools, if properly used, will yield the same answer?
A. WACC, IRR, and APV
B. NPV, IRR, and APV
C. NPV, APV and Flow to Debt
D. NPV, APV and WACC
E. APV, WACC, and Flow to Equity

Difficulty level: Medium
Topic: CAPITAL BUDGETING TOOLS
Type: CONCEPTS

13. The flow-to-equity approach to capital budgeting is a three step process of:
A. calculating the levered cash flow, the cost of equity capital for a levered firm, then adding the interest expense when the cash flows are discounted.
B. calculating the unlevered cash flow, the cost of equity capital for a levered firm, and then discounting the unlevered cash flows.
C. calculating the levered cash flow after interest expense and taxes, the cost of equity capital for a levered firm, and then discounting the levered cash flows by the cost of equity capital.
D. calculating the levered cash flow after interest expense and taxes, the cost of equity capital for a levered firm, and then discounting the levered cash flows at the risk free rate.
E. None of the above.

Difficulty level: Medium
Topic: FLOW-TO-EQUITY APPROACH
Type: CONCEPTS

14. The term (B x rb) gives the:
A. cost of debt interest payments per year.
B. cost of equity dividend payments per year.
C. unit cost of debt.
D. unit cost of equity.
E. weighted average cost of capital.

Difficulty level: Easy
Topic: COST OF DEBT
Type: CONCEPTS

15. The weighted average cost of capital is determined by:
A. multiplying the weighted average after tax cost of debt by the weighted average cost of equity.
B. adding the weighted average before tax cost of debt to the weighted average cost of equity.
C. adding the weighted average after tax cost of debt to the weighted average cost of equity.
D. dividing the weighted average before tax cost of debt by the weighted average cost of equity.
E. dividing the weighted average after tax cost of debt by the weighted average cost of equity.

Difficulty level: Easy
Topic: WACC
Type: CONCEPTS

16. A key difference between the APV, WACC, and FTE approaches to valuation is:
A. how the unlevered cash flows are calculated.
B. how the ratio of equity to debt is determined.
C. how the initial investment is treated.
D. whether terminal values are included or not.
E. how debt effects are considered; i.e. the target debt to value ratio and the level of debt.

Difficulty level: Medium
Topic: DEBT EFFECTS AND CAPITAL BUDGETING
Type: CONCEPTS

17. Using APV, the analysis can be tricky in examples of:
A. tax subsidy to debt.
B. interest subsidy.
C. flotation costs.
D. All of the above.
E. Both A and C.

Difficulty level: Medium
Topic: APV
Type: CONCEPTS

18. To calculate the adjusted present value, one will:
A. multiply the additional effects by the all equity project value.
B. add the additional effects of financing to the all equity project value.
C. divide the project's cash flow by the risk-free rate.
D. divide the project's cash flow by the risk-adjusted rate.
E. add the risk-free rate to the market portfolio when B equals 1.

Difficulty level: Easy
Topic: APV
Type: CONCEPTS

19. Flotation costs are incorporated into the APV framework by:
A. adding them into the all equity value of the project.
B. subtracting them from the all equity value of the project.
C. incorporating them into the WACC.
D. disregarding them.
E. None of the above.

Difficulty level: Easy
Topic: FLOTATION COSTS AND APV
Type: CONCEPTS

20. Non-market or subsidized financing _____ the APV _____.
A. has no impact on; as the lower interest rate is offset by the lower discount rate
B. decreases; by decreasing the NPV of the loan
C. increases; by increasing the NPV of the loan
D. has no impact on; as the tax deduction is not allowed with any government supported financing
E. None of the above

Difficulty level: Medium
Topic: APV
Type: CONCEPTS

21. What are the three standard approaches to valuation under leverage?
A. CAPM, SML, and CML
B. APR, FTE, and CAPM
C. APT, WACC, and CAPM
D. APV, FTE, and WACC
E. NPV, IRR, Payback

Difficulty level: Easy
Topic: VALUATION UNDER LEVERAGE
Type: CONCEPTS

22. The non-market rate financing impact on the APV is:
A. calculated by Tc B because the tax shield depends only on the amount of financing.
B. calculated by subtracting the all equity NPV from the FTE NPV.
C. irrelevant because it is always less than the market financing rate.
D. calculated by the NPV of the loan using both debt rates.
E. None of the above.

Difficulty level: Medium
Topic: NON-MARKET RATE FINANCING
Type: CONCEPTS

23. Which of the following are guidelines for the three methods of capital budgeting with leverage?
A. Use APV if project's level of debt is known over the life of the project.
B. Use APV if project's level of debt is unknown over the life of the project.
C. Use FTE or WACC if the firm's target debt-to-value ratio applies to the project over its life.
D. Both A and C.
E. Both B and C.

Difficulty level: Medium
Topic: CAPITAL BUDGETING WITH LEVERAGE
Type: CONCEPTS

24. An appropriate guideline to adopt when determining the valuation formula to use is:
A. never use the APV approach.
B. use APV if the project is far different from scale enhancing.
C. use WACC if the project is close to being scale enhancing.
D. Both A and C.
E. Both B and C.

Difficulty level: Easy
Topic: APV AND WACC
Type: CONCEPTS

25. In a leveraged buyout, the equity holders expect a successful buyout if:
A. the firm generates enough cash to serve the debt in early years.
B. the company can be taken public or sold in 3 to 7 years.
C. the company is attractive to buyers as the buyout matures.
D. All of the above.
E. None of the above.

Difficulty level: Medium
Topic: LEVERAGED BUYOUT
Type: CONCEPTS

26. The WACC approach to valuation is not as useful as the APV approach in leveraged buyouts because:
A. there is greater risk with a LBO.
B. the capital structure is changing.
C. there is no tax shield with the WACC.
D. the value of the levered and unlevered firms are equal.
E. the unlevered and levered cash flows are separated which cannot be used with the WACC approach.

Difficulty level: Easy
Topic: APV
Type: CONCEPTS

27. The value of a corporation in a levered buyout is composed of which following four parts:
A. unlevered cash flows and interest tax shields during the debt paydown period, unlevered terminal value, and asset sales.
B. unlevered cash flows and interest tax shields during the debt paydown period, unlevered terminal value and interest tax shields after the paydown period.
C. levered cash flows and interest tax shields during the debt paydown period, levered terminal value and interest tax shields after the paydown period.
D. levered cash flows and interest tax shields during the debt paydown period, unlevered terminal value and interest tax shields after the paydown period.
E. asset sales, unlevered cash flows during the paydown period, interest tax shields and unlevered terminal value.

Difficulty level: Challenge
Topic: VALUATION OF A LEVERAGED BUYOUT
Type: CONCEPTS

28. If the WACC is used in valuing a leveraged buyout, the:
A. WACC remains constant because of the final target debt ratio desired.
B. flotation costs must be added to the total UCF.
C. WACC must be recalculated as the debt is repaid and the cost of capital changes.
D. tax shields of debt are not available because the corporation is no longer publicly traded.
E. None of the above.

Difficulty level: Challenge
Topic: LEVERAGED BUYOUT COST OF CAPITAL
Type: CONCEPTS

29. The flow-to-equity approach has been used by the firm to value their capital budgeting projects. The total investment cost at time 0 is $640,000. The company uses the flow-to-equity approach because they maintain a target debt to value ratio over project lives. The company has a debt to equity ratio of 0.5. The present value of the project including debt financing is $810,994. What is the relevant initial investment cost to use in determining the value of the project?
A. $170,994
B. $267,628
C. $372,372
D. $543,366
E. $640,000

D/E = .5/1 D + E = 1.5 D/E = .5 $\Rightarrow$ D/V = .5/1.5 = .33
$Debt Financing = .33($810,994) = $267,628
Initial Investment for Equity Valuation = $640,000 - $267,628 = $372,372

Difficulty level: Challenge
Topic: FLOW-TO-EQUITY APPROACH
Type: PROBLEMS

30. A firm has a total value of $500,000 and debt valued at $300,000. What is the weighted average cost of capital if the after tax cost of debt is 9% and the cost of equity is 14%?
A. 7.98%
B. 10.875%
C. 11.000%
D. 12.125%
E. It is impossible to determine WACC without debt and equity betas.

WACC = .6*(.09) + .4*(.14) = .054 + .056 = .11 = 11%

Difficulty level: Medium
Topic: WACC
Type: PROBLEMS

31. The Felix Filter Corp. maintains a debt-equity ratio of .6. The cost of equity for Richardson Corp. is 16%, the cost of debt is 11% and the marginal tax rate is 30%. What is the weighted average cost of capital?
A. 8.38%
B. 11.02%
C. 12.89%
D. 13.00%
E. 14.12%

WACC = (.6/1.6)*(.11)*(1 - .3) + (1/1.6)*(.16) = .028875 + .10 = .1289 = 12.89%

Difficulty level: Medium
Topic: WACC
Type: PROBLEMS

32. The Webster Corp. is planning construction of a new shipping depot for its single manufacturing plant. The initial cost of the investment is $1 million. Efficiencies from the new depot are expected to reduce costs by $100,000 forever. The corporation has a total value of $60 million and has outstanding debt of $40 million. What is the NPV of the project if the firm has an after tax cost of debt of 6% and a cost equity of 9%?
A. $428,571
B. $444,459
C. $565,547
D. $1,000,000
E. None of the above is the correct NPV.

WACC = (40/60)*(.06) + (20/60)*(.09) = .07
NPV = (100,000/.07) - 1,000,000 = $428,571.43

Difficulty level: Medium
Topic: NPV
Type: PROBLEMS

33. The Tip-Top Paving Co. has an equity cost of capital of 16.97%. The debt to value ratio is .6, the tax rate is 34%, and the cost of debt is 11%. What is the cost of equity if Tip-Top was unlevered?
A. 0.08%
B. 3.06%
C. 14.0%
D. 16.97%
E. None of the above.

$.1697 = r_0 + (.6/.4)*(r_0 - .11)*(.66)$
$r_0 = .14 = 14\%$

Difficulty level: Challenge
Topic: UNLEVERED COST OF EQUITY
Type: PROBLEMS

34. The Tip-Top Paving Co. wants to be levered at a debt to value ratio of .6. The cost of debt is 11%, the tax rate is 34%, and the cost of equity for an all equity firm is 14%. What will be Tip-Top's cost of equity?
A. 0.08%
B. 3.06%
C. 14.0%
D. 16.97%
E. None of the above.

$r_s = .14 + (.6/.4)*(.14 - .11)*(.66)$
$r_s = .1697 = 16.97\%$

Difficulty level: Medium
Topic: LEVERED COST OF EQUITY
Type: PROBLEMS

35. The Tip-Top Paving Co. has a beta of 1.11, a cost of debt of 11% and a debt to value ratio of .6. The current risk free rate is 9% and the market rate of return is 16.18%. What is the company's cost of equity capital?
A. 7.97%
B. 8.96%
C. 16.97%
D. 17.96%
E. 26.96%

$r_s = .09 + 1.11*(.1618 - .09)$
$r_s = .1697 = 16.97\%$

Difficulty level: Medium
Topic: LEVERED COST OF EQUITY
Type: PROBLEMS

36. The Telescoping Tube Company is planning to raise $2,500,000 in perpetual debt at 11% to finance part of their expansion. They have just received an offer from the Albanic County Board of Commissioners to raise the financing for them at 8% if they build in Albanic County. What is the total added value of debt financing to Telescoping Tube if their tax rate is 34% and Albanic raises it for them?
A. $850,000
B. $1,200,000
C. $1,300,000
D. $1,650,000
E. There is no value to the scheme; Albanic is just conning Telescoping Tube into moving.

$NPV_{LOAN} = \$2,500,000 - [.08(\$2,500,000)(1 - .34)]/.11 = \$2,500,000 - (\$200,000(.66))/.11 = \$2,500,000 - \$1,200,000 = \$1,300,000$

Difficulty level: Challenge
Topic: VALUE OF DEBT FINANCING
Type: PROBLEMS

37. The BIM Corporation has decided to build a new facility for its R&D department. The cost of the facility is estimated to be $125 million. BIM wishes to finance this project using its traditional debt-equity ratio of 1.5. The issue cost of equity is 6% and the issue cost of debt is 1%. What is the total flotation cost?
A. $0.75 million
B. $1.29 million
C. $3.19 million
D. $3.75 million
E. $8.75 million

Total flotation cost = (1.5/2.5)*125*(.01) + (1/2.5)*125*(.06) = $0.75 + $3 = $3.75

Difficulty level: Challenge
Topic: FLOTATION COST
Type: PROBLEMS

38. A very large firm has a debt beta of zero. If the cost of equity is 11%, and the risk-free rate is 5%, the cost of debt is:
A. 5%
B. 6%
C. 11%
D. 15%
E. It is impossible to tell without the expected market return.

Debt is riskless, therefore rate equals risk free rate of 5%.

Difficulty level: Medium
Topic: RISK FREE DEBT
Type: PROBLEMS

39. The Free-Float Company, a company in the 36% tax bracket, has riskless debt in its capital structure which makes up 40% of the total capital structure, and equity is the other 60%. The beta of the assets for this business is .8 and the equity beta is:
A. 0.53
B. 0.73
C. 0.80
D. 1.14
E. 1.47

$\beta_E = .8(1 + (1 - .36)(.4/.6)) = 1.14$

Difficulty level: Medium
Topic: EQUITY BETA
Type: PROBLEMS

40. The Delta Company has a capital structure of 20% risky debt with a β of .9 and 80% equity with a β of 1.7. Their current tax rate is 34%. What is the β for Delta Company?
A. 0.59
B. 0.82
C. 1.06
D. 1.49
E. 1.54

$\beta_{LF} = .2(.9) + 1.7(.8) = .18 + 1.36 = 1.54$

Difficulty level: Easy
Topic: LEVERED BETA
Type: PROBLEMS

41. A firm is valued at $6 million and has debt of $2 million outstanding. The firm has an equity beta of 1.8 and a debt beta of .42. The beta of the overall firm is:
A. 1.00
B. 1.11
C. 1.20
D. 1.34
E. It is impossible to determine with the information given.

Beta = .3333(.42) + .6667 (1.8) = 1.34

Difficulty level: Easy
Topic: FIRM BETA
Type: PROBLEMS

42. Brad's Boat Company, a company in the 40% tax bracket, has riskless debt in its capital structure which makes up 30% of the total capital structure, and equity is the other 70%. The beta of the assets for this business is .9 and the equity beta is:
A. 0.54
B. 0.90
C. 1.13
D. 1.20
E. 1.49

$\beta_E = .9(1 + (1 - .40)(.3/.7)) = 1.13$

Difficulty level: Medium
Topic: EQUITY BETA
Type: PROBLEMS

43. The Delta Company has a capital structure of 30% risky debt with a β of 1.1 and 70% equity with a β of 1.4. Their current tax rate is 30%. What is the β for Delta Company?
A. 0.95
B. 1.00
C. 1.10
D. 1.31
E. 1.40

$\beta_{LF} = .3(1.1) + 1.4(.7) = .33 + .98 = 1.31$

Difficulty level: Easy
Topic: LEVERED BETA
Type: PROBLEMS

44. A firm is valued at $8 million and has debt of $2 million outstanding. The firm has an equity beta of 1.5 and a debt beta of .60. The beta of the overall firm is:
A. 0.600
B. 1.155
C. 1.275
D. 1.500
E. None of the above.

Beta = .25(.60) + 1.5 (.75) = .15 + 1.125 = 1.425

Difficulty level: Easy
Topic: FIRM BETA
Type: PROBLEMS

Essay Questions

45. A loan of $10,000 is issued at 15% interest. Interest on the loan is to be repaid annually for 5 years, and the non-amortized principal is due at the end of the fifth year. Calculate the NPV of the loan if the company's tax rate is 34%.

After tax interest payments are (.15) ($10,000) (1 - .34) = $990
NPV = $10,000 - $990 PVIFA $_{5, 15}$ - $10,000/(1.15)^5 = $1,710

Topic: NET PRESENT VALUE OF A LOAN
Type: ESSAYS

46. The Azzon Oil Company is considering a project that will cost $50 million and have a year-end after-tax cost savings of $7 million in perpetuity. Azzon's before tax cost of debt is 10% and its cost of equity is 16%. The project has risk similar to that of the operation of the firm, and the target debt-equity ratio is 1.5. What is the NPV for the project if the tax rate is 34%?

The WACC is (.6) (.10) (1 - .34) + (.4) (.16) = .1036
NPV = -$50,000,000 + $7,000,000/1036 = $17,567,567

Topic: NET PRESENT VALUE
Type: ESSAYS

47. Quick-Link has debt outstanding with a market value of $200 million, and equity outstanding with a market value of $800 million. Quick-Link is in the 34% tax bracket, and its debt is considered risk free. Merrill Lynch has provided an equity beta of 1.50. Given a risk free rate of 3% and an expected market return of 12%, calculate the discount rate for a scale enhancing project in the hypothetical case that Quick-Link is all equity financed.

Unlevered beta = 1.5 (8/(8 + .66(2)) = 1.2875 = 1.29
Discount rate = .03 + 1.29(.12% - .03%) = .03 + .1161 = .1461 = 14.61%

Topic: UNLEVERING BETA
Type: ESSAYS

48. A project has a NPV, assuming all equity financing, of $1.5 million. To finance the project, debt is issued with associated flotation costs of $60,000. The flotation costs can be amortized over the project's 5 year life. The debt of $10 million is issued at 10% interest, with principal repaid in a lump sum at the end of the fifth year. If the firm's tax rate is 34%, calculate the project's APV.

NPV of all equity financed project = $1.5 million
PV of flotation costs including deductibility of expenses is:
-$60,000 + $12,000(.34) PVIFA $_{5, 10\%}$ = -$44,534
NPV_{LOAN}= $10,000,000 - $660,000(3.7908) - $10,000,000/$1.10^5$= $1,288,820
APV = $1,500,000 + $1,288,820 - $44,534 = $2,744,286

Topic: ADJUSTED PRESENT VALUE
Type: ESSAYS

49. The all equity cost of capital for flat Rock Grinding is 15% and the company has set a target debt to value ratio of 50%. The current cost of debt for a firm of this risk is 10% and the corporate tax rate is 34%. Calculate the WACC for the Flat Rock Grinding Corporation.

Cost of Equity = .15 + 1(.66)(.10) = .15 + .066 = .216
WACC = .216(.5) + .11(.66)(.5) = .108 + .0363 = .1443 or 14.43%

Topic: WEIGHTED AVERAGE COST OF CAPITAL
Type: ESSAYS

50. Kelly Industries is given the opportunity to raise $5 million in debt through a local government subsidized program. While Kelly would be required to pay 12% on its debt issues, the Hampton County program sets the rate at 9%. If the debt issue expires in 4 years, calculate the NPV of this financing decision.

NPV = $5,000,000 - $450,000 ($PVIFA_{12\%,4}$) - $5,000,000/$1.12^4$
= $5,000,000 - $1,366,807 - $3,177,590 = $455,603

Topic: NET PRESENT VALUE
Type: ESSAYS

51. Discuss the adjusted present value, the flow to equity and the weighted average cost of capital methods of capital budgeting with leverage and the guidelines for using each method.

The adjusted present value is defined as follows: the value of the project to the unlevered firm plus the net present value of financing side effects. There are four side effects: the tax subsidy of debt, the costs of issuing new securities, the costs of financial distress, and subsidies to debt financing. The flow to equity approach is an alternative to adjusted present value. It is the discounted cash flow from a project to the equityholders of the levered firm at the cost of equity. Finally, the weighted average cost of capital approach considers the firm that is financed with both debt and equity and allocates the costs proportionally for each capital component. Essentially, the manager should use the WACC or FTE if the firm's target debt-to-value ratio applies to the project over its life. Alternatively, one should use APV if the project's level of debt is known over the life of the project.

Topic: ADJUSTED PRESENT VALUE, FLOW TO QUITY AND WACC
Type: ESSAYS