Schweser Printable Answers - Session Corporate Finance

Test ID#: 1362409

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Question 1 - #29293

Bailey Manufacturing Co. (Bailey) designs and manufactures a hoses and fittings for a wide range of industrial applications. After closing the books on 2004, Bailey's executive management team had a meeting to discuss their goals and priorities for 2005. This meeting, held every January, is an opportunity for each of Bailey's division managers to present proposals for the projects that they are considering for investment during the upcoming year. Bradley Conover is the chief financial officer for Bailey Manufacturing Co. He has received proposals for five different projects that are deemed to have the highest priority from Bailey's division managers.

Before evaluating the projects, Conover must make some pro forma forecasts for 2005. According to Bailey's 2005 pro forma income statement, Conover expects Bailey to earn a net profit of $7,000. He also expects the firm to maintain its current dividend payout ratio of 50 percent. The firm has a target capital structure of 70 percent equity and 30 percent debt. Conover estimates the applicable corporate tax rate to be 35 percent.

Conover's next step is to evaluate capital market conditions. Because Bailey is in an economically sensitive industry, the firm has a greater than average level of systematic risk. Conover estimates that the beta applicable for a standard project for the firm is 1.5. Over the last three years, the U.S. economy has been in a sustained expansion, and Bailey has enjoyed strong profit growth. This strong growth has allowed Bailey to fund most of its capital budget internally. However, many economists believe that growth will slow in 2005 despite the government's accommodative fiscal policy. As a result, Conover believes that management's aggressive goals and objectives imply that Bailey will need to seek external capital.

Conover calls a meeting with Derek Munn, CFA, an investment banker with Lyndon Capital Corp. Using Conover's forecasts, Munn believes that Bailey will be able to issue new debt at a cost of 9 percent and new equity at a cost of 18 percent. Munn also gives Conover a research report that says the 2005 expected return for the market is 11 percent, and three-month Treasury bills will yield 5 percent.

The expected cash flows from the top five projects identified by Bailey's division managers are shown in Figure 1 below. Projects A, C and E are independent projects and projects B and D are mutually exclusive.

Figure 1

Year	*Project A*	*Project B*	*Project C*	*Project D*	*Project E*
0	(1,000)	(2,500)	(1,750)	(4,000)	(2,000)
1	100	500	200	1,400	300
2	250	900	300	1,400	400
3	450	1,200	600	1,400	700
4	650	1,200	700	1,400	700
5	0	700	800	1,400	700

Part 1)
Conover starts his analysis by estimating the firm's current weighted average cost of capital (WACC). What is the firm's current WACC?

A) 18.00%.
B) 15.30%.
C) 12.50%.
D) 11.56%.

Your answer: A was incorrect. The correct answer was D) 11.56%.

Cost of Equity = 0.05 + 1.5(0.11-0.05) = 0.14

WACC = wdkd(1-t) + weke = 0.30(0.09)(1-0.35) + 0.70(0.14) = 0.1156

Part 2)
Assuming all of the projects have equal risk, Conover creates an investment opportunity set (IOS) by ranking the projects starting with the most favorable to the *least* favorable project as follows:

A) ABCDE.
B) DBACE.
C) BECAD.
D) DBCAE.

Your answer: A was incorrect. The correct answer was B) DBACE.

Start by calculating the NPV of each project as follows:

NPV(A) = (1,000) + 100/(1.1156)^1 + 250/(1.1156)^2 + 450/(1.1156)^3 + 650/(1.1156)^4 + 0 = 34.26
NPV(B) = (2,500) + 500/(1.1156)^1 + 900/(1.1156)^2 + 1200/(1.1156)^3 + 1200/(1.1156)^4 + 700/(1.1156)^5 = 715.44
NPV(C) = (1,750) + 200/(1.1156)^1 + 300/(1.1156)^2 + 600/(1.1156)^3 + 700/(1.1156)^4 + 800/(1.1156)^5 = 17.34
NPV(D) = (4,000) + 1,400/(1.1156)^1 + 1,400/(1.1156)^2 + 1,400/(1.1156)^3 + 1,400/(1.1156)^4 + 1,400/(1.1156)^5 = 1,102.18
NPV(E)= (2,000) + 300/(1.1156)^1 + 400/(1.1156)^2 + 700/(1.1156)^3 + 700/(1.1156)^4 + 700/(1.1156)^5 = (48.51)

Ranking the projects starting with the highest NPV to lowest NPV: DBACE.

Part 3)
Conover calculates new WACC beyond the retained earnings break-even point as:

A) 18.00%.
B) 15.30%.
C) 14.36%.
D) 12.00%.

Your answer: A was incorrect. The correct answer was C) 14.36%.

Cost to issue new equity is given as 18 percent.

WACC = $w_d k_d(1-t) + w_e k_e$ = 0.30(0.09)(1-0.35) + 0.70(0.18) = 0.1436.

Part 4)
Based on the investment opportunity schedule (IOS) and marginal cost of capital (MCC) schedule, which projects should be accepted? Projects:

A) A, B, and D.
B) A, B, C, and D.
C) A and D.
D) A, B, C, D, and E.

Your answer: A was incorrect. The correct answer was C) A and D.

Pro forma earnings are $7,000 and the dividend payout ratio is 50 percent, meaning that Bailey's retained earnings for 2005 are estimated to be $7,000 (1 – 0.5) = $3,500.

The retained earnings break-even point is calculated as follows: $3,500/0.70 = $5,000.

Projects B and D are mutually exclusive therefore only the project with the highest NPV is chosen, NPV(D) = 1,102.18. Project A has the next highest NPV(A) = 34.26. The total investment required for projects D and A is $5,000. Therefore, new equity must be issued before considering other projects. The new WACC is 14.36 percent including the increased cost of 18 percent for equity. The remaining projects have IRR below the new WACC and their NPVs are negative using the higher WACC. Projects D and A are the only projects that

should be accepted.

Part 5)
Conover uses a technique involving random variables in a simulation to estimate the NPV of the projects. This technique is known as:

A) bootstrapping.
B) sensitivity analysis.
C) Monte Carlo.
D) scenario analysis.

Your answer: A was incorrect. The correct answer was C) Monte Carlo.

Monte Carlo simulation requires the analyst to estimate the probability distributions of input variables (e.g., sales, variable cost per unit, etc.), and then generate random values representing possible outcomes for each of these input variables. After the process is repeated many times, these variables are used in a simulation model to generate an expected NPV for a project.

Scenario analysis is a technique that requires the analyst to estimate project NPVs over a range of possible scenarios (such as recession, average, boom). The range of NPVs provides evidence concerning the project's risk. Sensitivity analysis involves changing a single input variable to see how sensitive the project's NPV is to changes in the input variable. The greater the sensitivity, the greater the project's risk. Bootstrapping describes the effect that can occur when a high-growth, high-P/E firm (high P/E) merges with a low-growth, low-P/E firm.

Part 6)
Project C is similar in risk to an industry that has an average beta of 1.2. If Conover uses a pure play method to evaluate project C, what is the appropriate cost of equity capital for the project?

A) 10.3%.
B) 11.2%.
C) 14.4%.
D) 12.2%.

Your answer: A was incorrect. The correct answer was D) 12.2%.

Project C is similar in risk to an industry that has an average beta of 1.2. Therefore, we use the capital asset pricing model and the industry average beta to calculate the cost of equity capital for Project C:

Cost of Equity Capital for Project C = 0.05 + 1.2(0.11-0.05) = 0.122.

Question 2 - #28977

Alias, Inc. is a maker of plastic containers for the food and beverage industry. Bruce Atkinson, Alias' director of operations, is looking at upgrading the firm's manufacturing capacity in an effort to improve the firm's competitive position.

Atkinson is being assisted by Linda Ralston, a financial analyst recently hired by Alias. Over the last three months, Ralston and Atkinson have been going to trade shows and conducting other research on different machines and processes used in the plastic container industry. Ralston estimates that travel and hotel costs expended as a result of their research amounted to $8,000. Atkinson considers the money well spent because he now had two great ideas for improving Alias' competitiveness in the industry.

The first of these ideas is that Atkinson is considering replacing a bottle blow molding machine. This machine was purchased for $50,000 3 years ago and is being depreciated over 5 years to a zero salvage value using straight-line depreciation. The firm has 2 years of depreciation remaining on the old machine.

If Atkinson decides to make the replacement, the old machine can be sold today for $10,000. The new machine will cost the firm $100,000. According to Ralston's projections, the new machine will increase revenue by $40,000 per year for 3 years but will also increase costs by $5,000 per year. The machine will be depreciated over a modified accelerated cost recovery system (MACRS) 3-year class life. At the end of year 3, the equipment will be sold for $20,000. The firm's tax rate is 35 percent.

Atkinson is also considering an investment in a new silk screen labeling machine that can put labels on Alias plastic bottles as part of the manufacturing process. Ralston estimates that the new labeling machine will cost $50,000, and that shipping and installation costs will be $7,500. The addition of the labeling machine will require a $2,000 investment in spare parts inventory at the inception of the project, but these parts can be resold for $2,000 at the project's end. Compared with the manual process that Alias used to use for putting on labels, Ralston estimates that the new machine will reduce costs by $25,000 per year for 4 years. The labeling machine will be depreciated over a MACRS 5-year class life. At the end of year 4, the equipment will be sold for $8,000.

Depreciation schedules under MACRS are shown in the exhibit below:

Ownership Year	*Class of Investment*			
	3-Year	*5-Year*	*7-Year*	*10-Year*
1	33%	20%	14%	10%
2	45%	32%	25%	18%
3	15%	19%	17%	14%
4	7%	12%	13%	12%
5		11%	9%	9%
6		6%	9%	7%
7			9%	7%
8			4%	7%
9				7%
10				6%
11				3%
	100%	100%	100%	100%

Before making the final calculations, Atkinson and Ralston discuss net present value analysis for the projects they are considering. Ralston tells Atkinson, "when calculating the net present value of the two new projects, we also need to account for the costs expended as a result of researching the project options." Atkinson makes a note on his legal pad and says to Ralston, "There is no need to make any adjustments for inflation in our net present value calculations because inflation is included as part of the expected returns used to calculate our weighted average cost of capital." After their conversation, Ralston and Atkinson prepare their report to present to Alias' CEO.

Part 1)
The initial investment outlay for purchasing the new bottle blow molding machine is *closest* to:

A) -$90,000.
B) -$100,000.
C) -$86,500.
D) -$110,000.

Your answer: A was incorrect. The correct answer was C) -$86,500.

The initial outlay is the cost of the new machine minus the market value of the old machine plus/minus any tax consequences that arise from selling the old machine. The new machine's cost is $100,000.

The old machine can be sold for $10,000, however considering that the machine's initial cost was $50,000 and has 3 years of accumulated straight-line depreciation, the book value of the old machine is $50,000 – (3 × 10,000) = $20,000. This means that the sale of the machine will result in a (10,000 – 20,000) = -10,000 loss. The loss will result in tax savings for Alias equal to 0.35 × 10,000 = $3,500.

The total initial investment outlay for the new machine is:

–$100,000 + 10,000 + 3,500 = –$86,500

Part 2)
The year 1 operating cash flow for the new bottle blow molding machine is *closest* to:

A) $22,750.
B) $34,300.
C) $32,625.
D) $30,800.

Your answer: A was incorrect. The correct answer was D) $30,800.

The operating cash flows equal the after-tax benefit plus the tax savings from depreciation. In the case of a replacement project, you must take the difference between the additional depreciation from the new asset minus the lost depreciation from the old asset. The firm gave up $10,000 per year for of depreciation on the old asset for years 1 and 2 of the new asset's life.

CF1 = (revenue – cost)1 × (1 – tax rate) + net depreciation1 × (tax rate)
((40,000 – 5,000) × 0.65) + [((0.33 × 100,000) – 10,000) × (0.35)] = $30,800

Part 3)
The total cash flow from the bottle blow molding machine in year 3 is *closest* to:

A) $28,000.
B) $48,000.
C) $43,450.
D) $33,725.

Your answer: A was incorrect. The correct answer was C) $43,450.

The total cash flow for the terminal year is equal to the operating cash flow plus the non-operating (or terminating) cash flow.
The operating cash flow equals:

CF3 = (revenue – cost)3 × (1 – tax rate) + net depreciation3 × (tax rate)
((40,000 – 5,000) × 0.65) + [((0.15 × 100,000) – 0) × 0.35)] = $28,000

The year 3 non-operating cash flow equals:

Market or salvage value plus/minus tax consequences of selling it. The new machine will be sold for $20,000. The book value is:

$100,000 × 0.07 = $7,000
$20,000 – $7,000 = $13,000

The firm will pay taxes on the gain of:

13,000 × 0.35 = $4,550

Total terminal year cash flow = $28,000 + $20,000 – $4,550 = $43,450

Note: Once we have the project's estimated cash flows, the next step in the process would be to calculate the net present value and internal rate of return for the project.

Part 4)
The initial cash flow for the labeling machine is *closest* to:

A) -$59,500.
B) -$57,500.
C) -$50,000.
D) -$52,000.

Your answer: A was incorrect. The correct answer was A) -$59,500.

The initial outlay is the cost of the labeling machine, the shipping and installation costs, and the increase in net working capital (in this case the increase in spare parts inventory):

(–$50,000) + (–$7,500) + (–$2,000) = –$59,500.

Part 5)
The year 2 operating cash flow for the labeling machine is *closest* to:

A) $21,040.
B) $34,650.
C) $33,400.
D) $22,690.

Your answer: A was incorrect. The correct answer was D) $22,690.

The operating cash flows equal the after-tax benefit plus the tax savings from depreciation.

CF2 = Benefit2 × (1 – tax rate) + depreciation2 × (tax rate)
($25,000 × 0.65) + ($57,500 × 0.32 × 0.35) = $22,690

Note that the shipping and installation costs are part of the depreciable basis for the machine.

Part 6)
With regard to the conversation between Ralston and Atkinson concerning NPV analysis:

A) Ralston's statement is correct; Atkinson's statement is incorrect.
B) Ralston's statement is incorrect; Atkinson's statement is correct.
C) Ralston's statement is correct; Atkinson's statement is correct.
D) Ralston's statement is incorrect; Atkinson's statement is incorrect.

Your answer: A was incorrect. The correct answer was D) Ralston's statement is incorrect; Atkinson's statement is incorrect.

The hotel and travel costs expended to research the projects would be expended whether Alias decided to take on the projects or not. The research costs are a sunk cost, which is a cash outflow that has previously been committed or has already occurred. Since these costs are not incremental, they should not be included as part of the analysis. Therefore Ralston's statement is incorrect.

Atkinson's statement is also incorrect. Although it is true that the expected inflation is built into the expected returns used to calculate the weighted average cost of capital, Atkinson and Ralston still need to adjust the project cash flows upward to account for inflation. If no adjustments are made to the project cash flows to account for inflation, the NPV will be biased downward.

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