**Question 1:** Investments A and B, suppose that each has a cost of capital of 10%. How long does it take for each investment’s discounted cash flows to pay back its 100,000 TL investment?

|  |  |  |
| --- | --- | --- |
| Year | Investment A | Investment B |
| 2000 | 13.000 | 80.000 |
| 2001 | 20.000 | 13.000 |
| 2002 | 33.000 | 7.000 |
| 2003 | 34.000 | 6.000 |
| 2004 | 66.000 | 6.000 |

**Solution 1:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Investment A | 10% | Net present value of cash inflows | Accumulated discounted cash flows |
| 2000 | 13.000 | 0,909 | 11,817 | 11,817 |
| 2001 | 20.000 | 0,826 | 16,520 | 28,337 |
| 2002 | 33.000 | 0,751 | 24,783 | 53,120 |
| 2003 | 34.000 | 0,683 | 23,222 | 76,342 |
| 2004 | 66.000 | 0,621 | 40,986 | 117,328 |

100,000 – 76,342 = 23,658

12 months 40,986

X 23,658

X= 6,93

For Investment A: 4 years 7 months

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Investment B | 10% | Net present value of cash inflows | Accumulated discounted cashflows |
| 2000 | 80.000 | 0,909 | 72,720 | 72,720 |
| 2001 | 13.000 | 0,826 | 10,738 | 83,458 |
| 2002 | 7.000 | 0,751 | 5,257 | 88,715 |
| 2003 | 6.000 | 0,683 | 4,098 | 92,813 |
| 2004 | 6.000 | 0,621 | 3,726 | 96,539 |

For Investment B >5 years

**Question 2:** Use the table for the question below. Consider the following balance sheet:

|  |
| --- |
| **Luther Corporation****Consolidated Balance Sheet****December 31, 2009 and 2008 (in $ millions)** |
| **Assets** | **2009** | **2008** |  | **Liabilities and Stockholders' Equity** | **2009** | **2008** |
| *Current Assets* |  |  |  | *Current Liabilities* |   |   |
| Cash | 63.6 | 58.5 |   | Accounts payable | 87.6 | 73.5 |
| Accounts receivable |   55.5 | 39.6 |   | Notes payable/short-term debt |    10.5 |     9.6 |
| Inventories |  45.9 | 42.9 |   | Current maturities of long-term debt |    39.9 |    36.9 |
| Other current assets |     6.0 |     3.0 |   | Other current liabilities |      6.0 |   12.0 |
|      Total current assets | 171.0 | 144.0 |   |      Total current liabilities |   144.0 | 132.0 |
|   |   |   |   |   |   |   |
| *Long-Term Assets* |  |  |  | *Long-Term Liabilities* |   |   |
|   Land | 66.6 | 62.1 |   |   Long-term debt | 239.7 | 168.9 |
|   Buildings | 109.5 |   91.5 |   |   Capital lease obligations | --- | --- |
|   Equipment | 119.1 |    99.6 |   | Total Debt | 239.7 | 168.9 |
|   Less accumulated  depreciation | (56.1) |    (52.5) |   | Deferred taxes | 22.8 | 22.2 |
| Net property, plant, and equipment | 239.1 |   200.7 |   | Other long-term liabilities | --- | --- |
| Goodwill | 60.0 | -- |   | Total long-term liabilities | 262.5 | 191.1 |
| Other long-term assets | 63.0 | 42.0 |   | Total liabilities | 406.5 | 323.1 |
|      Total long-term assets | 362.1 |  242.7 |   | Stockholders' Equity | 126.6 |   63.6 |
|   |   |   |   |   |   |   |
| **Total Assets** | **533.1** | **386.7** |  | **Total liabilities and Stockholders' Equity** | **533.1** | **386.7** |

1. What is the change in Luther's net working capital?
2. What is Luther's cash flow from operating activities for the year ending December 31, 2009?

**Solution 2:**

1. What is the change in Luther's net working capital?

Changes in NWC = Ending NWC – Beginning NWC

 = (Ending Current Assets – Ending Current Liabilities) – (Beginning Current Assets – Beginning Current Liabilities)

= (171 – 144) – (144 – 132) = 15

1. What is Luther's cashflow from operating activities for the year ending December 31, 2009?

Operating Activities:•Accounts Receivable – deduct the increases

 • Accounts Payable – add the increases

 • Inventories – deduct the increases

Operating cashflow = Net Income + Depreciation - increases in Accounts Receivable + increases in Accounts Payable − increases in Inventories

Operating cash flow = 10.6 + 3.6 - (55.5 - 39.6) + (87.6 - 73.5) - (45.9 - 42.9) = 9.4.

**Question 3:** A firm is 40% financed by debt with a yield-to-maturity of 8.5%. The equity has a beta of 1.3, the market risk premium is 8.4% and the risk-free rate is 3.8%. What is the firm's weighted average cost of capital if the tax rate is 21%?

**Solution 3:**

Rf= 3.8 %

Rm−Rf = 8.4 %

β = 1.3

RE = Rf + β (Rm−Rf)

RE = 3.8% + 1.3 (8.4%) = 14.72%

WACC = (1 − 0.40) (0.1472) + 0.40 (0.085) (1 − 0.21) = 0.1152, or 11.52%

**Question 4:** Reliable Electric is a regulated public utility, and it is expected to provide steady dividend growth of 5% per year for the indefinite future. Its last dividend was $5 per share; the stock sold for $60 per share just after the dividend was paid. What is the company’s cost of equity?

**Solution 4:**

|  |  |
| --- | --- |
| Dividend growth | 5% |
| DIV0 | $5 |
| P0 | $60 |

D1 = D0 x (1+g) = 5 x (1+0,05) = 5,25

Ke = (D1 / P0) + g = (5,25 / 60) + 0,05 = 13,75 %

**Question 5:** What proportion of a firm is equity financed if the WACC is 14%, the before-tax cost of debt is 10.77%, the tax rate is 21%, and the required return on equity is 18%?

**Solution 5:** Cost of debt (Kd)=Yield (1 – t)

Required return on equity = 18%

WACC = 14%

0.14 = (1 − *x*)(10.77%)(1 − 0.21) + *x*(18%)

*x* = 57.86%

**Question 6:** Given the following information, calculate the weighted average cost of capital for ABC Company. Line up the calculations in the order shown in the Table.

**Percent of capital structure:**

Preferred stock 20%

Commone quity 40

Debt 40

**Additional information:**

Corporate tax rate 25%

Dividend, preferred $6.50

Last Dividend, expected common $2.00

Price, preferred $110.00

Growth rate 6%

Bond yield 8.5%

Flotation cost, preferred $4.20

Price, common $80.00

#### Solution 6: ABC Company

*Kd* = Yield (1 – *T*)

 = 0.085 (1 – 0.25)

 = 0.085(0.75)

 = 6.38 %

*Kp* = *Dp*/(*Pp* – *F*)

= $6.50/($110 – 4.20) = $6.50/$105.8= 6.14%

*D*0 = 2.00

*D*1 = *D*0 (1+g) = 2.00 (1+0.06) = 2.12

*Ke* = (*D*1/*P*0) + *g*

= ($2.12/$80) + 6% = 2.65% + 6% = 8.65%

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Cost (aftertax)** | **Weights** | **Weighted Cost** |
| Debt (*Kd*) Preferred stock (*Kp*) Common equity (*Ke*) (retained earnings)Weighted average cost of capital (*Ka*)  |  6.38% 6.14 8.65 |  40% 20 40 |  2.55% 1.23 3.46 7.24% |

**Question 7:** Vital Slience, Inc. , has a Project with the following cash flows:

|  |  |
| --- | --- |
| Required Return | 9% |
| Annual cash flows: |  |
| Year 0 |  $(50.000) |
| Year 1 |  $ 12.100  |
| Year 2 |  $ 10.200  |
| Year 3 |  $ 12.000  |
| Year 4 |  $ 13.000  |
| Year 5 |  $ 15.000  |
| Year 6 |  $ 15.500  |
| Year 7 |  $ 8.000  |

The company evaluates all projects by applying IRR rule. If the appropriate discount rate is 9 percent, should the company accept the project?

**Solution 7:**

50,000 = 12,100/(1+ r) 1 + 10,200/ (1+ r) 2 + 12,000/( 1+ r) 3 + 13,000/ (1+ r) 4 + 15,000/( 1+ r) 5 + 15,500/ (1+ r) 6 + 8,000/ (1+ r) 7

When we solve the equation; the IRR will be 15,47%. (For calculations it can be used the IRR function in Excel)

15,47% > 9% Accept the project.

**Question 8:** Suppose you are offered $10,700 today but must make the following payments:

|  |  |
| --- | --- |
| Year 0 | − $10.700 |
| Year 1 |  $4.900 |
| Year 2 |  $3.900 |
| Year 3 |  $2.300 |
| Year 4 |  $2.800 |
| Year 5 | $1.500 |

1. What is the IRR of this offer?
2. What is the NPV of the offer if the appropriate discount rate is 10 percent? 20 percent?

**Solution 8:**

1. 10,700 = 4,900/(1+ r) 1 + 3,900/ (1+ r) 2 + 2,300/( 1+ r) 3 + 2,800/ (1+ r) 4 + 1,500/( 1+ r) 5

When we solve the equation; the IRR will be 16,76%. (For calculations it can be used the IRR function in Excel)

* And we assume that the discount rate is 10 %. In this case;

NPV= -10,700 + 4,900/ (1 + 10%) 1  + 3,900/(1 + 10%) 2 + 2,300/ (1 + 10%) 3 + 2,800/ (1 + 10%) 4 + 1,500/ (1 + 10%) 5 = 1,549.53

Accept the project.

* And we assume that the discount rate is 20 %. In this case;

NPV= -10,700 + 4,900/ (1 + 20%) 1  + 3,900/(1 + 20%) 2 + 2,300/ (1 + 20%) 3 + 2,800/ (1 + 20%) 4 + 1,500/ (1 + 20%) 5 = − 624,19

Reject the project.

**Question 9:** A Project with an initial cost of $30,200 is expected to provide cash flows of $10,200, $11,300, $14,400, and $8,900 over the next four years, respectively. If the required return is 8.7 percent, what is the project's profitability index?

**Solution 9:**

PI = [$10,200/(1+.087)+ $11,300/(1+.087)2 + $14,400/(1+.087)3 + $8,900/(1+.087)4]/$30,200
PI = 1.210

OR

For Project A:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash Flows | Project A | 8,7% | Net present value of cash inflows |
| Year 1 | 10,200 | 0,919963 | 9,383625 |
| Year 2 | 11,300 | 0,846332 | 9,563555 |
| Year 3 | 14,400 | 0,778595 | 11,21176 |
| Year 4 | 8,900 | 0,716278 | 6,374877 |

NPVA= –30,200 +10,200 / (1 + .087) + 11,300 / (1 + .087)2+14,400/ (1 + .087)3+8,900/ (1 + .087)4= 6,334

Profitability Index for A: NPV/Investment

PIX= 36,53/30,200=1,210

**Question 10:** The company shows the following information on its 2019 income statement: sales = $246,000; costs = $135,000; other expenses = $7,100; depreciation expense = $19,100; interest expense = $10,000; taxes = $18,876; dividends = $9,800. Inaddition, you’re told that the firm issued $7,900 in new equity during 2019 and redeemed $6,800 in outstanding long-term debt.

1. What is the 2019 cash flow to creditors?
2. What is the 2019 cash flow to stockholders?

**Solution 10:**

1. CFC = Interest – Net new LTD

 CFC = $10,000 – (–$6,800)

 CFC = $16,800

Note that the net new long-term debt is negative because the company repaid part of its long- term debt.

1. CFS = Dividends – Net new equity

 CFS = $9,800 – $7,900

 CFS = $1,900