**Çağ University**

**Faculty of Economics and Administrative Sciences**

**IFN 421 Investment Analysis**

**Quiz Answers**

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**11.01.2023**

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Instructions

1. **Each question is 10 points. Duration is 65 minutes.**
2. Juan is considering two independent projects: Project A costs $74,600 and has projected cash flows of $18,700, $46,300, and $12,200 for Years 1 to 3, respectively. Project B costs $70,000 and has cash flows of $10,600, $15,800, and $67,900 for Years 1 to 3, respectively. Juan assigns a discount rate of 10 percent to Project A and 12 percent to Project B. Which project or projects, if either, should he accept based on the profitability index rule?

|  |  |  |
| --- | --- | --- |
| Year | Project A | Project B |
| 0 | -74,600 | -70,000 |
| 1 | 18,700 | 10,600 |
| 2 | 46,300 | 15,800 |
| 3 | 12,200 | 67,900 |

A. Accept both projects.

B. Accept Project A and reject Project B.

C. Reject both projects.

**D. Accept Project B and reject Project A.**

**Solution**

Accept Project B and reject Project A.

Profitability Index=(Present value of CF)/(Initial investment)

PIA = ($18,700/1.10 + $46,300/1.102 + $12,200/1.103)/$74,600= 0.86

PIB = ($10,600/1.12 + $15,800/1.122 + $67,900/1.123)/$70,000= 1.01

**or**

**Excel:** PIA = NPV(10%;18700;46300;12200)/74600=0.86

PIB = NPV(12%;10600;15800;67900)/70000=1.01

Accept Project B and reject Project A because only B has a PI greater than 1.

1. The accounting statement of cash flows consists of the cash flows from:   
   **A. operations, investing activities, and financing activities.**
2. operations, investing activities, and divesting activities.
3. internal activities, external activities, and financing activities.
4. balance sheet accounts only.
5. A company has net working capital of $3.570. If all its current assets were liquidated, the company would receive $7.880. What are the company's current liabilities?
6. $ 5.980
7. $ **4.310**
8. $ 10.027
9. $ 2.679

|  |
| --- |
| Net working capital = Current Assets – Currrent Liabilities |
| 3.570 = 7.880 – CL |
| CL= 4.310TL |

1. Two mutually exclusive projects have 3-year lives and a **required rate of return of 10.5** **percent**. Project A costs $75,000 and has cash flows of $18,500, $42,900, and $28,600 for Years 1 to 3, respectively. Project B costs $72,000 and has cash flows of $22,000, $38,000, and $26,500 for Years 1 to 3, respectively. Using the IRR, which project, or projects, if either, should be accepted?

A) Accept both projects   
 B) Accept Project A and reject Project B.  
 C) Accept Project B and reject Project A.  
 **D) Reject both projects**

|  |  |  |
| --- | --- | --- |
| Year | Project A | Project B |
| 0 | -75000 | -72000 |
| 1 | 18500 | 22000 |
| 2 | 42900 | 38000 |
| 3 | 28600 | 26500 |

0 = −$75,000 + $18,500/(1 + IRR) + $42,900/(1 + IRR)2 + $28,600/(1 + IRR)3  
**IRRa = 9.12%**  
 0 = −$72,000 + $22,000/(1 + IRR) + $38,000/(1 + IRR)2 + $26,500/(1 + IRR)3  
**IRRb = 9.48%**

**or**

**Excel:** IRRa=IRR(-75000;18500;42900;28600)= 9.12%

IRRb=IRR(-72000;22000;38000;26500)= 9.48%

Both projects should be rejected because their IRR's are less than the required rate of return. Thus, both projects also have negative NPVs. There is no reason to do incremental analysis as neither project is acceptable.

1. Wilson's Market is considering two mutually exclusive projects that will not be repeated. The required rate of return is 13.9 percent for Project A and 12.5 percent for Project B. Project A has an initial cost of $54,500, and should produce cash inflows of $16,400, $28,900, and $31,700 for Years 1 to 3, respectively. Project B has an initial cost of $69,400, and should produce cash inflows of $0, $48,300, and $42,100, for Years 1 to 3, respectively. Which project, or projects, if either, should be accepted and why?

**A) Project A; because its NPV is positive while Project B's NPV is negative**   
 B) Project A; because it has the higher required rate of return  
 C) Project B; because it has a negative NPV which indicates acceptance  
 D) Neither project; because neither has an NPV equal to or greater than its initial cost

|  |  |  |
| --- | --- | --- |
| Year | Project A | Project B |
| 0 | -54500 | -69400 |
| 1 | 16400 | 0 |
| 2 | 28900 | 48300 |
| 3 | 31700 | 42100 |

NPVA = −$54,500 + $16,400/1.139 + $28,900/1.1392 + $31,700/1.1393  
**NPVA= $3,628.27**  
NPVB = −$69,400 + $48,300/1.1252+ $42,100/1.1253  
**NPVB = −$1,668.86**

**or**

**Excel:** NPVa=NPV(13,9%;16400;28900;31700)+(-54500)= **3,628.27**

NPVb=NPV(12,5%;0;48300;42100)+(-69400)= **-1,668.86**

1. Sensitivity analysis is conducted by:
2. holding all variables at their base level and changing the required rate of return.
3. changing the value of two variables to determine their interdependency.
4. **changing the value of a single variable and computing the resulting change in the project's NPV.**
5. reviewing a project after implementation to determine how the actual results are comparing to the predicted results.
6. A firm's cost of capital:
7. will decrease as the risk level of the firm increases.
8. for a specific project is primarily dependent upon the source of the funds used for the project.
9. is independent of the firm's capital structure.
10. **depends upon how the funds raised are going to be spent.**
11. Based on the data in the table, compute the expected value:

|  |  |  |
| --- | --- | --- |
| Outcome | Probability of outcome | Assumptions |
| 200 | 0.30 | Pessimistic |
| 300 | 0.50 | Moderately successful |
| 400 | 0.20 | Optimistic |

1. 380
2. **290**
3. 55
4. 450

The expected value () is a weighted average of outcomes (R) times their probabilities (P):



Expected value:

|  |  |  |
| --- | --- | --- |
| R | P | R x P |
| 200 | 0.3 | 60 |
| 300 | 0.5 | 150 |
| 400 | 0.2 | 80 |
| The expected value () | | **290** |

1. Consider an investment with an initial cost of $20,000 that expected to last for 5 years. The expected cash flows in Years 1 and 2 are $5,000 each, in Years 3 and 4 are $5,500 each, and the Year 5 cash flow is $1,000. Assume each annual cash flow is spread evenly over its respective year. What is the payback period?

|  |  |
| --- | --- |
| Year | Investment |
| 0 | -20000 |
| 1 | 5000 |
| 2 | 5000 |
| 3 | 5500 |
| 4 | 5500 |
| 5 | 1000 |

A) 3.18 years   
 **B) 3.82 years**  
 C) 4.00 years  
 D) 4.55 years

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Investment | Cumulative |  | 1 years | 5500 | |
| 0 | -20000 |  |  | x | 4500 | |
| 1 | 5000 | 5000 |  |  |  | |
| 2 | 5000 | 10000 |  | =4500/5500=0,82 |  | |
| 3 | 5500 | 15500 |  | **=3+0,82= 3,82 years** | |  |
| 4 | 5500 | 21000 |  |  |  | |
| 5 | 1000 | 22000 |  |  |  | |

1. The Corporation has a systematic risk (β) of 0,8. The market risk premium is 7% and the risk-free rate is 9%. The yield on the company’s debt is 5%, and the firm has a 20% marginal tax rate. Long term debt of firm is 5,000,000 TL and equity is 7,000,000 TL. What is the Weighted Average of the company? (WACC=(Weight of equity x Cost of equity)+(Weight of debt x Cost of debt)
2. 12.14%
3. 20.07%
4. 11.23%
5. **10.18%**

RE = Rf + β (Rm−Rf)

= 0.09 + 0.8 x 0.07 = 14.60%

Kd = Yield (1 – T)

= 0.05 (1 – 0.20) = 4%

**Weights:**

For equity =

=7000000/(7000000+5000000)= 58.33%

For debt = 5000000/(5000000+7000000)

= 41.67%

**WACC** = (14.60% x 58.33%) + (4% x 41.67%) = 10,18 %