Essay on corporate finance

Finance

Consider a project to produce solar water heaters. It requires a $10 million investment and offers a level after-tax cash flow of $1. 75 million per year for 10 years. The opportunity cost of capital is 12 percent, which reflects the project's business risk. Suppose the project is financed with $5 million of debt and $5 million of equity. The interest rate is 8 percent and the marginal tax rate is 35 percent. The debt will be paid off in equal annual installments over the project's 10-year life. A) Calculate APV.

APV = NPV + PV of debt tax shield NPV = PV of cash flows - initial investment Initial Investment 10, 000, 000 Cash flows 1, 750, 000 Period 10 years Discounting rate12% PV of cash flows 9, 887, 890 using the PV function NPV (112, 110) We now calculate the PV of debt tax shield Year Debt Outstanding at Start of Year InterestInterest Tax ShieldsPresent Value of Tax Shields 1 5, 000, 000 400, 000 140, 000 129, 630 2 4, 500, 000 360, 000 126, 000 108, 025 3 4, 000, 000 320, 000 112, 000 88, 909 4 3, 500, 000 280, 000 98, 000 72, 033 3, 000, 000 240, 000 84, 000 57, 169 6 2, 500, 000 200, 000 70, 000 44, 112 7 2, 000, 000 160, 000 56, 000 32, 675 8 1, 500, 000 120, 000 42, 000 22, 691 9 1, 000, 000 80, 000 28, 000 14, 007 10 500, 000 40, 000 14, 000 6, 485 Total 2, 200, 000 770, 000 575, 736 NPV (112, 110) PV of debt tax shield 575, 736 APV 463, 626 B) How does APV change if the firm incurs issue costs of $400, 000 to raise the $5 million of required equity? With flotation cost , APV = NPV + PV of debt tax shield - flotation cost Flotation cost 400, 000 APV 63, 626