

Questions

Financing Sources (Equity and Debt)

Question 1

National Investment Analysis (NIA) is determining the NPV of a venture capital investment with a 5-year horizon. If the project is successful the original \$10 million investment is expected to be worth \$100 million in an IPO. Based on its analysis, NIA has determined that the probability of failure starts at 25% and falls 5% per year (25% to start, 20% the next year, and so forth) for the entire period. For projects of this type, the cost of equity is typically 20%. What is the NPV of this venture?

- a. \$7.52 million
- b. \$12.66 million
- c. \$13.16 million
- d. \$30.19 million

Question 2

An investor is evaluating a venture capital project that will require an investment of \$1.4 million. The investor estimates that she will be able to exit the venture successfully in eight years. She also estimates that there is an 80 percent chance that the venture will not survive until the end of the eight year. If the venture does survive until then, it is equally likely that the payoff at the time of exit will be either \$25 million or \$35 million. The investor is considering an equity investment in the project, and her cost of equity for a project with similar risk is 20 percent.

- a. Compute the NPV of the venture capital project.
- b. Recommend whether to accept or reject the project.

Question 3

VenCap, Inc is a venture capital financier. It estimates that investing \$4.5 million in a particular venture capital project can return \$60 million at the end of six years if it succeeds; however, it realizes that the project may fail at any time between now and the end of six years. The following table has Vencap's estimates of probabilities of failure for the project. First, 0.28 is the probability of failure in year 1. The probability that the projects fails in second year, given that it has survived through yaer 1, is 0.25. The probability that the projects fails in the third year, given that it has survived through yaer 2, is 0.22, and so forth. VenCap is considering an equity investment in the project, and its cost of equity for a project with this level of risk is 22 percent.

Question 4

Valuing a venture capital investment requires which of the following inputs?

- a. Projections of annual cash flows.
- b. The expected exit value of the firm if successful.
- c. The credit rating of the firm's lenders.
- d. All of above.

Question 5

"Bridge" financing is provided during which stage of venture capital investing?

- a. Seed-stage
- b. Second-stage
- c. Third-stage
- d. Mezzanine-stage

Question 6

Venture capital investing and distressed securities investing are similar in which of the following respects?

- a. Both types of investments are relatively liquid.
- b. Both types of investments require relatively long time horizons to generate a return.
- c. Both types of investments require knowledge regarding vintage cycles.
- d. Both types of investments suffer from survivorship bias in their historical risk and return data.

Question 7

ABC Ltd recently sold 15 million shares in an IPO. The offering price was €25.50, and the underwriting spread was 8%. How much cash did the company receive?

- a. €382.50 million
- b. €351.90 million
- c. €326.35 million
- d. €421.59 million

Question 8

A security offering that raises capital for firms is called a:

- a. Primary security issue.
- b. secondary security offering
- c. prospectus
- d. none of the above

Question 9

ABC Ltd recently raised funds in an IPO. They received €15 from the underwriter, the offering price was €18, and the market price rose to €22 on the first day of trading. What is the spread paid by ABC, Ltd.

- a. 20.00%
- b. 13.64%
- c. 16.67%
- d. 12.57%

Question 10

XYZ Enterprises want to conduct an IPO. The offering price of the stock is €20, The underwriter's discount is 8% and legal and other expenses are estimated to be €2,500,000. How many shares does the company have to issue to net €15,000,000.

- a. 750,000
- b. 825,789
- c. 910,569
- d. 951,087

Question 11

ABC enterprises faces costs of 15% of the amount of cash rose for an IPO. If the company needs to raise €20 million, what is the amount of money that needs to be raised?

- a. €20.000 million
- b. €23.529 million
- c. €23.000 million
- d. €21.432 million

Question 12

Bonds sold by foreign corporations to US investors are called:

- a. Eurobonds
- b. Samurai bonds
- c. Yankee bonds
- d. Bail bonds

ANSWERS

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Question 1

Choice “a” is correct. The first step in the calculation is to determine the probability that the venture will survive until the IPO.

	Probability of Failure	Probability of Success	Cumulative Probability
Year 1	25%	75%	75,00%
Year 2	20%	80%	60,00%
Year 3	15%	85%	51,00%
Year 4	10%	90%	45,90%
Year 5	5%	95%	43,61%
Year 1	25%	75%	75,00%

Based on the above table the venture has a 43,61% chance of success and a 56,39% chance of failure. The next step is to calculate the NPV on the investment if it survives to the IPO.

$$NPVSUCCESS = \frac{FinalcashFlow}{(1+r)^t}$$

The final step is to calculate the expected value using the probabilities derived above. If the project succeeds, the payoff is \$30,19 million if the project fails the investor loses \$10 million:

$$E(NPV) = \$30,19 \text{ million} \times 43.61\% - \$10 \text{ million} \times 56.39\% = \$7.52 \text{ million}$$

Choice “b” is incorrect. This calculation reverses the probabilities.

Choice “c” is incorrect. This calculation ignores the probability of losing the original \$10 million.

Choice „d” is incorrect. This calculation includes the present value of the IPO payoff. No allowance is made for the probabilities of success or failure.

Question 2

a. There are three possibilities.

Project does not survive until the end of the eight year.

Project survives and the investor exits with a payoff of \$25 million.

Project survives and the investor exits with a payoff of \$35 million.

There is an 80 percent chance that the project will not survive until the end of the eight year. That is, a 20 percent chance that the project will survive, and the investor will exit the project then. If the project survives, it is equally likely that the payoff at the time of exit will be either \$25 million or \$35 million.

The project’s NPV is the present value of the expected payoffs minus the required initial investment of \$1.4 million.

$$NPV = 0.8 \times \$0 + 0.2 \times \frac{[(0.5 \times \$25 + 0.5 \times \$35)]}{1.2^8} - \$1.4 = -\$0.004592 \text{ million or } -\$4,592$$

b. Because the expected NPV of the project is negative, the project should be rejected.

Question 3

The probability that the venture capital project survives to the end of the first year is $(1-0.28)$, 1 minus the probability of failure in the first year; the probability that it survives to the end of the second year is the product of the probability it survives the first year times the probability it survives the second year, or $(1-0.28) \times (1-0.25)$. So the probability that the project survives to end of the sixth year is:

$$(1-0.28) \times (1-0.25) \times (1-0.22) \times (1-0.18) \times (1-0.18) \times (1-0.10) = \\ 0.72 \times 0.75 \times 0.78 \times 0.82 \times 0.82 \times 0.90 = 0.255 \text{ or } 25.5\%$$

The net present value of the project, if it survives to the end of the sixth year and thus earns \$60 million, is:

$$-\$4.5 \text{ million} + \frac{\$60 \text{ million}}{(1.22)^6} = \$13.7 \text{ million}$$

The net present value of the project if it fails is \$4.5 million. Thus, the project expected NPV is a probability-weighted average of these two amounts, or;

$$(0.255 \times \$13.7) + (0.745 \times (-\$4.5)) = \$141,000$$

Based on the project's positive net present value, VenCap should accept the investment.

Question 4

Choice "b" is correct. The expected exit value is required to value a venture capital project, as well as the expected time to reach IPO and the conditional probabilities of success/failure for the project.

Choice "a" is incorrect. Because annual cash flows are so difficult to project for venture capital projects, the expected exit value (if the project is successful) is discounted to the present to obtain a valuation of the project.

Choice "c" is incorrect. The credit ratings of the firm's lenders do not affect the valuation of a venture capital investment.

Choice "d" is incorrect. Projections of annual cash flows and credit ratings of the firm's lenders are not necessary inputs.

Question 5

Choice “d” is correct. Mezzanine is the “bridge” stage when venture capital financing is provided to prepare the firm to expand and go public.

Choice “a” is incorrect. The venture capital project is only a business idea in the seed stage. Capital is provided for a product development and market research.

Choice “b” is incorrect. The firm is expanding after the beginning of production and sales in the second stage but usually is not yet profitable. Capital is needed to finance this expansion.

Choice “c” is incorrect. Capital is provided for expansion of the firm’s physical plant, product improvement or the start of significant marketing activities in the third stage.

Question 6

Choice “b” is correct. Both require a long time horizon due to their risk and illiquidity.

Choice “a” is incorrect. Both are relatively illiquid.

Choice “c” is incorrect. Knowledge of vintage cycles is important for venture capital investing, but not for distressed securities investing.

Choice “d” is incorrect. Survivorship bias relates to a bias in performance databases when data on unsuccessful firms are discarded when they fail, leaving only risk and return data from the surviving firms. This tends to skew the performance reporting to indicate that the funds are less volatile and produce higher returns than is actually the case. Both venture capital and distressed securities investments involve single firms, and survivorship bias in the historical data is not a relevant concept.

Question 7

Choice “b” is correct

Question 8

Choice “a” is correct

Question 9

Choice “c” is correct

Question 10

Choice “d” is correct

Question 11

Choice “b” is correct

Question 12

Choice “c” is correct