

## ENTREPRENEURIAL FINANCE: *Venture Capital, Deal Structure and Valuation*

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### Chapter 13. Harvesting

#### Questions and Problems

1. The investors in Generation.com, a company organized to sell fashions to the current generation of teenagers over the Internet, are interested in harvesting their investments. The investment banker is recommending an IPO that would yield gross proceeds of about \$20 million. Based on a lengthy meeting with an investment banker, they believe the post-money valuation of Generation.com would be \$120 million based on the offer price. The investment banker would try to set the offer price at about 85% of the expected market value per share after the offering and would charge a total fee of \$1,400,000. In addition, Generation.com, itself, would incur out-of-pocket costs of about \$400,000.
  - a. Assuming the IPO is designed to achieve a target aftermarket share price of \$20, what will be the offer price of the IPO?
  - b. How many shares should be outstanding after the IPO?
  - c. How many shares does the firm need to issue to achieve its target gross proceeds and how many shares will the current shareholders (those before the IPO) have?
  - d. After all costs, including the implicit cost of underpricing, what is the dollar total cost of the issue, the cost per share issued, and how much will the issuer net per share issued?
  - e. What is total issue cost as a percentage of gross proceeds, as a percentage of the aftermarket value of issued shares, and as a percentage of the anticipated aftermarket value of the current shareholders' shares?
2. Suppose that after the IPO the current investors in Generation.com intend to harvest by using Rule 144. Based on the agreement they expect to enter with the investment banker, they cannot sell anything for six months. Assume that the market standard deviation is 14% per six months, the risk-free rate is 2% per six months, the market risk premium is 3% per six months, the equity beta is 1.5, and the standard deviation of the stock value over six months is 45% of the stock price at the time.
  - a. After the six months are over, a well-diversified investor with 2 million shares expects that it would take one year to completely harvest her investments by gradual sale into the market under the Rule. (Thus, the average time required per share is 12 months after the IPO.)
    - (1) Compute the expected stock price in 12 months, assuming expected appreciation depends on the CAPM.
    - (2) Compute the standard deviation of share values as of month 12, assuming returns are uncorrelated over time.
    - (3) Consider an investor who is well diversified. What is the present value per share of the investor's equity after the IPO?
  - b. Another investor, who is not well diversified, has 70% of his wealth invested in a market index and the remainder invested in the venture. This investor would also require one year to completely harvest his investment under Rule 144.
    - (1) Modify Valuation Template 4 (from Appendix 11A) or use equations 11.2 through 11.5 to reflect this information, and use it to estimate the present value per share of the

investor's equity. (Note: You can do the analysis based on an average holding period of 12 months after the IPO.)

- (2) How would you expect the value of this investor's holdings to be affected if more than one year would be needed to completely harvest the investment? Explain.
3. As an alternative to Rule 144 liquidation, the investors in Generation.com are considering a secondary offering six months after the IPO. They expect the stock to appreciate according to the CAPM during the six months but they expect to lose about 3% of its value when the seasoned offering is announced. They also anticipate that that issue costs other than the price drop will be about 2% of gross proceeds. Market and stock price appreciation assumptions are all as stated in problem 2.
  - a. Evaluate this harvesting alternative from the perspective of the well-diversified investor in problem 2.
  - b. Evaluate the alternative from the perspective of the underdiversified investor in problem 2.
  - c. Compare your results in this problem to your results in problem 2. Why do the values differ? Which harvesting alternative do you recommend? Why?
4. Private placement is another alternative for the investors in Generation.com. The investment banker believes an investor can be found who would be interested in acquiring the venture for its public market value, less a normal private placement discount. As indicated in problem 1, the venture's post-money valuation is about \$120 million. In addition, its book-to-market equity ratio is about 0.5. The product is selling well, and the venture is approaching breakeven profitability.
  - a. Use the information from the private placement discussion in the chapter to develop an estimate of the private placement discount percentage and private placement value per share. Explain your reasoning. Also develop and explain an estimate of the uncertainty of the percentage.
  - b. How does the value of the private placement alternative compare with the other possibilities for harvesting?
5. An outside investor in a new venture is eager to harvest its investment and has just notified the entrepreneur of its intent to exercise its demand registration rights. The entrepreneur believes that if the venture were to go public at this time, it would be substantially undervalued by the market, owing to its slow progress over the most recent three years. She expects that the venture would be worth substantially more in two years than it is today. Consequently, the entrepreneur is considering a leveraged buy-out of the investor. Currently, the entrepreneur has 20% of her wealth invested in the venture and 80% in a market index. If she were to buy out the investor, her borrowing would effectively change her ownership to 35% of wealth invested in the venture and 65% in the market index. The entrepreneur's current wealth is \$7 million. The expected market risk premium is 6%, and the risk-free rate is 4% per year. The standard deviation of market returns for one year is 20%. The entrepreneur expects that her wealth invested in the venture will be worth \$5 million in two years, with a standard deviation of \$2.5 million. Correlation between the venture and the market is 0.4.
  - a. Suppose, initially (and counter-factually) that the investor agrees with the entrepreneur's forecast of cash flows in two years. Use Valuation Template 4 to determine the fraction of equity the investor would need to own in order to be indifferent between holding the

shares for an additional two years and selling out to the entrepreneur for \$1,050,000 (15% of the entrepreneur's current wealth).

- b. Under the assumption in part (a), what is the value of the entrepreneur's ownership interest and what is the value of the entrepreneur's portfolio?
  - c. If, with agreement between the parties, as in part (a) the entrepreneur were to acquire the investor's interest, what is the value of the entrepreneur's investment in the venture and the value of the entrepreneur's portfolio?
6. Based on data for comparable public firms, the equity of a private firm would be worth \$50 per share. The entrepreneur is considering using an ESOP plan to provide liquidity. Under the ESOP, the trust would buy shares from the entrepreneur at their public-market value and use the shares as a retirement investment vehicle for employees. Employees would be free to choose between investing their annual retirement contributions in company stock and investing in mutual funds of public securities. Recognizing that the company shares could only be redeemed at retirement or resignation, the company would partially match the an employee's retirement contribution to the ESOP in an effort to make the company plan as attractive to employees as investing in the market. As a basis for the analysis, the company is examining three representative employee profiles:
- An early career employee, with a ten-year expected term of employment and 5% of total wealth invested in the business.
  - A mid-career employee with a seven-year expected term of employment and 10% of total wealth invested in the business.
  - A late career employee with a four-year expected term of employment and 15% of total wealth invested in the business.

The risk-free rate is 4% per year, the market rate is 10% per year, the one-year standard deviation of the market is 14%, and (based on comparables) the business has a correlation of 0.25 with the market and beta risk of 0.80.

- a. Find the annual expected return and annualized standard deviation of returns. Develop a model to simulate annual stock values per share.
  - b. Determine the amount of supplemental investment that would be needed per share to compensate each of these representative employees for not putting their retirement savings into the market.
  - c. Under what conditions (time to retirement and fraction of wealth invested) would you want to invest in the ESOP as opposed to in the market?
7. Discuss the reasons that periodic valuation is important when ownership of a private company is transferred to employees via an ESOP. What factors do you think would lead an entrepreneur (whose shares an ESOP was purchasing) to favor a leveraged ESOP over an unleveraged ESOP?
8. From the perspective of the entrepreneur, what are the pros and cons of an IPO as opposed to private sale of the venture to a public company in exchange for stock?
9. Your firm wishes to raise \$10 million of net proceeds by going public. The anticipated aftermarket price (after the IPO) is \$23 and the firm plans to issue the new shares at a price that is \$3.00 below the anticipated aftermarket price. The underwriter's fee is 10% of gross proceeds. To achieve the net proceeds objective, how many shares would your firm need to issue? Calculate the total cost of the offering as a percentage of net proceeds.

10. Your company's shares are currently selling for \$20, with 1 million shares outstanding. You are planning a rights offering at \$16 per share plus an appropriate number of rights. You seek to raise \$4 million in proceeds. How many shares do you need to issue? How many rights will be required to acquire a new share? What is the value of one right? What will be the rights-on price?