Corporate Finance, Module 14: “The Capital Markets”

Homework Assignment

(The attached PDF file has better formatting.)

Jonathan is a consulting actuary who has developed an enterprise risk management (ERM) application that he intends to market to insurance companies. On January 1, 20X2, he invests $100,000 of his own money to develop the application. On January 1, 20X5, he sets up a firm to raise more financing and market the product.

His firm raises $1 million at *first-stage financing* on July 1, 20X5, from venture capitalists, and a **$1.25 million** first-stage after-the-money valuation is placed on the firm. The venture capitalists contribute $1 million of the $1.25 million value of the firm, so they receive 80% of the stock of the firm.

The firm succeeds. When additional funds are needed three years later (July 1, 20X8), other venture capitalists contribute $2 million in *second-stage financing* and the firm is now valued at $4 million. The new venture capitalists contribute half the new value of the firm, so they receive half the new firm’s stock.

A. What is Jonathan’s (paper) return from original investment to first-stage financing?
B. What is Jonathan’s (paper) return from first-stage financing to second-stage financing?
C. What is Jonathan’s (paper) wealth at second-stage financing?

Jacob: How do we determine the value of the firm at first-stage financing and second-stage financing?

Answer: The venture capitalists get a certain percentage of the firm's stock.

- At first-stage financing, the venture capitalists contribute $1 million and get 80% of the firm's stock. The implicit value of the firm is $1 million / 80% = $1.25 million.
- At second-stage financing, the venture capitalists contribute $2 million and get 50% of the firm's stock. The implicit value of the firm is $2 million / 50% = $4.00 million.

Question: How do the venture capitalists get 50% of the firm's stock at second-stage financing? Do Jonathan and the first venture capitalists each sell a certain amount of stock?

Answer: Suppose Jonathan and the first venture capitalists agreed on 1 million shares of stock at first-stage financing. Each share of stock is worth (on paper) $1.25. Jonathan gets 200,000 shares and the venture capitalists get 800,000 shares. At second-stage financing, the firm issues another 1 million share of stock, which are given to the second venture capitalists in exchange for $2 million.

Question: How do we evaluate Jonathan's (paper) wealth right after first-stage financing and second-stage financing?

Answer: At first-stage financing, Jonathan has 20% of the firm's stock, so his (paper) wealth is 20% of the firm's value, or $250,000. At second-stage financing, he has 200,000 of a total 2 million shares, so his portion is 10% of $4 million = $400,000.

Question: Why are these paper returns and paper wealth?

Answer: Until the firm is publicly traded, Jonathan can not exchange his stock for cash.