Assignment

Fin 580 Entrepreneurial Finance

Peking University HSBC Business School

Solution

1. R.K. Maroon is a seed-stage web-oriented entertainment company with important intellectual property. RKM's founders, all technology experts in the relevant area, believe that their unique intellectual property will allow them to achieve a subsequent (year 3) $100,000,000 venture value with a one-time initial $2,000,000 in venture financing. The founders have organized with 1,000,000 shares and are willing to grant venture investors a 100% return on their business plan projections.

a) What percent of ownership must be sold to the venture investors to grant the 100% three-year return?

2,000,000*(1+1)^3=16,000,000

Percent owned by investors = 16,000,000 / 100,000,000 = 16%

b) What is the number of shares that must be issued to the venture investors in order for the investor to earn his target return? What is the issue price per share? What is the pre-money valuation and post-money valuation?

1,000,000 / .84 = 1,190,476 total shares

190,476 new shares issued to investors

1,000,000 founder shares

$2,000,000 / 190,476 = $10.5

Pre-money valuation = $10.5 * 1,000,000 = $10,500,000

Post-money valuation = $10.5 * 1,190,476= $12,500,000

c) Suppose the venture investors don't buy the business plan predictions and want to price the deal assuming a second round (additional financing round) in year 2 of $8,000,000 with a 40% return. What is the final ownership composition in year 3 (final ownerships for founder, first round investor, and second round investor)?

8,000,000(1.4)^1=11,200,000

Second round investor final ownership = 11,200,000 / 100,000,000 = 11.2%

Founder final ownership = 1 - .16 -.112 = .728

Total shares outstanding at exit = 1,000,000 / .728 = 1,373,626

Second round shares = 153,846; final ownership = .112

First round shares = 219,780 ; final ownership = 219,780 / 1,373,626 = .16

Founder shares = 1,000,000; final ownership = 1,000,000 / 1,373,626 = .728

d) Suppose the venture investors agree with the founders' assessment, price the deal accordingly as in Part B, and turn out to be wrong (an additional $8,000,000 at 40% must be injected for the final year). What is the final ownership composition in year 3 (final ownerships for founder, first round investor, and second round investor)?

Founder shares + First Round Shares = 1,000,000 + 190,476 = 1,190,476

Shares percent owned by Founder + First Round = 1 - .112 = .888

Total shares at exit = 1,190,476 / .888 = 1,340,626

Second Round final ownership = .112

First Round final ownership = 190,476 / 1,340,626 = .1421

Founder final ownership = 1,000,000 / 1,340,626 = .7459

2. You have been asked to estimate future revenue and the cost of capital for a restaurant. The restaurant, Healthy Meals, will be converted into a state-of-the-art kitchen with an investment of $80,000. Licensing, legal and other set-up costs are expected to amount to $20,000, with the entire initial cost $100,000 being tax deductible immediately. Half of the initial cost $50,000 will be covered by a bank loan, with an interest rate of 7%. The kitchen is capable of producing up to 60 family meals a day comfortably.

The family meals, which will come pre-packaged and ready to serve up to 6 people, will be priced at $60 for a meal next year, with the price expected to rise with the inflation rate in subsequent years (with inflation assumed to be 2% a year). The expectation is that the restaurant will sell about 20 meals a day, on average, next year, but that sales will increase each year by 10 meals after that to hit a peak of 60 meals a day, in five years; the restaurant plans to stay open approximately 300 days a year.

The average levered beta across public restaurants is 0.902 and their average debt to equity ratio for public restaurants is 25%. We will assume that Healthy Meals will adopt a debt to equity ratio of 50% for next 5 years. You can assume a risk-free rate of 5%, a risk premium of 6.3% and tax rate of 40%. The after-tax cost of debt is 4.2% and the debt-to-capital ratio is 20%.

a) Calculate the expected revenues at the restaurant for the next 5 years.

	Year 1	Year 2	Year 3	Year 4	Year 5
# of Meals/day	20	30	40	50	60
# of Days/ year	300	300	300	300	300
Price/Meal	$60.00	$61.20	$62.42	$63.67	$64.95
Revenues	$360,000	$550,800	$749,088	$955,087	$1,169,027

b) Estimate the cost of capital for this restaurant

To estimate the cost of equity for Healthy Meals, we begin with the betas of publicly traded firms in the restaurant business and cleanse them of the financial leverage effect:
Average regression beta across public restaurants = 0.902
Average Debt to equity ratio for public restaurants= 25%
Unlevered Beta for restaurants = 0.902/ (1+(1-.4) (.25)) = 0.78

We will assume that Healthy Meals will adopt a debt to equity ratio of 50% for next 5 years. The resulting levered beta is computed below:
Levered beta for Healthy Meals = 0.78 (1+ (1-.4) (.50)) = 1.01

Sticking with the risk-free rate of 5% and an equity risk premium of 6.3%, we can estimate the cost of equity from this beta
Cost of equity = 0.05 + 1.01 * 0.063 = 0.114

Using the after-tax cost of debt of 4.2% and the debt-to-capital ratio of 20%, we can estimate the cost of capital.
Cost of capital = 0.114 * 0.8 + 0.042*0.20 = 0.10