

ENTREPRENEURIAL FINANCE: *Strategy Valuation and Deal Structure*

Chapter 8. Assessing Financial Needs

Questions and Problems

1. Use the sustainable growth template in Figure 8.1 and the following data to answer the questions below:

Factor	Definition and Value
1. Asset Turnover	Sales / Total Assets = 2.0
2. Financial Leverage	Total Assets / Equity = 4.0
3. Return on Sales (ROS)	Net Income / Sales = 7%
4. Dividend Retention (R)	Fraction of Net Income Retained = 1/4

- What is the sustainable growth rate, g^* ?
 - What level of initial equity investment is required if Year 2 sales are to reach \$2,500?
 - What is the new g^* if the firm pays no dividend?
 - If the firm would like to achieve a g^* of 25% with no change in dividend policy, what level of financial leverage would be required?
2. EBIT/Sales = 15 percent, Sales/Assets = 2.0, Assets/Equity = 2.0, the dividend payout ratio = 10 percent, the interest rate on debt = 10 percent, and the tax rate = 40 percent.
- What is the sustainable growth rate?
 - How does the sustainable growth rate change in response to reducing any of the above ratios or percentages by one-half (e.g., EBIT/Sales = 7.5 percent)?
 - How does the sustainable growth rate change in response to increasing any of the above ratios or percentages by one-half (e.g., EBIT/Sales = 22.5 percent)?
 - Do some changes have greater impacts on the sustainable growth rate than others? Are the effects linear or nonlinear? Explain your findings.
3. SIM Refer back to Problem 2. Suppose EBIT/Sales has an expected value of 15 percent with a standard deviation of 10 percent, Sales/Assets has an expected value of 2 with a standard deviation of 0.3, the interest rate is expected to be 10 percent with a standard deviation of 1 percent, and the tax rate is 40 percent if net taxable income is positive but zero if taxable income is negative.
- Build a simulation model of the sustainable growth rate. Set up the model so the leverage ratio and payout ratio are policy choices and dividend yield (the ratio of dividend payout to equity investment) is the objective.
 - Simulate the model with the initial assumptions to determine the expected sustainable growth rate and its standard deviation.

- c. Assume the company has targets for g^* and dividend yield of 20% and 5% respectively. Given the base case values for the leverage and payout ratios, i.e., 2.0 and 10%, what percentage of the time should they expect to achieve their targets? Using the financial leverage and payout ratios as policy choices, try to design a policy that increases the likelihood of them achieving their targets for g^* and dividend yield.
4. A new software start-up, Lutoj, Inc., is developing a new smart home software product. Lutoj believes revenue must reach \$5 million in Year 3 for the product to be viable. Lutoj's operating margin (EBIT/Sales) is 20%, the tax rate is 30%, and asset turnover is 5X. The founders have \$200,000 between them for initial equity funding. Assume Lutoj will pay no dividend.
- a. With no other financing, will the \$200,000 of founder investment be sufficient to achieve the Year 3 sales target? If not, what level of initial equity investment would be required?
- b. Assume Lutoj cannot raise additional equity, but will use debt to achieve the scale necessary to reach the Year 3 sales target. They can borrow at an 8% interest rate before tax. How much debt will initially be required?
5. As a result of a merger, Mike Bloom has just received a golden handshake of \$5 million from his former partners. Rather than taking a comfortable early retirement, he has decided to try to leverage the payment into something even more valuable. His plan is to use the money to start a new financial information service, and he is willing to invest all of the money, if necessary. His goal is to realize an annual return of \$8 million per year beginning in five years. The \$8 million is to be measured as his share of venture net income after tax.

Bloom expects that each dollar invested in the venture can support \$3 in annual sales and that the before-tax return on sales will average 15 percent per year if only equity financing is used. Debt financing is expected to cost 8 percent per year, and the corporate tax rate is 30 percent. Bloom plans to draw no investment income from the venture until the end of the fifth year. After that, he expects to be able to take his share of net income as a distribution each year.

- a. Can Bloom achieve his return objective by using debt financing? If so, what capital structure policy (with stable leverage ratio) will enable him to do so?
- b. Suppose an outside investor is interested in participating in the venture by contributing equity capital at the initiation of the venture. Doing so would enable the venture to start up on a larger scale. The investor wants 1 percent of total equity in exchange for each \$250,000 of investment. Can Bloom achieve his objective using outside equity financing? If so, how much outside financing is needed?
- c. In the event that either debt or equity could be used to meet the objective, what other considerations should affect the choice? In particular, how might you expect issues of control and risk to bear on the decision?
6. Look back at Problem 5.
- a. How does the sustainable growth rate of the venture with all equity financing change under the scenario where the service is very well-received by the financial community, so that each dollar of investment can support \$3.75 worth of sales and the profitability of sales is 20 percent? What does this do to the amount of equity financing that is required to achieve the objective?
- b. How are your conclusions affected by a scenario in which the product is not very well received, so that each dollar of investment supports only \$2.50 worth of sales and the profitability of sales is 10 percent?

- c. How are your conclusions in parts (a) and (b) affected if outside debt financing is used instead of equity.
 - d. Do the results of the scenario analysis affect your perceptions of the relative merits of debt or equity financing in this case? If so, how, and why?
7. Lillian Jordon is considering using some of the cash generated from her mail-order business to open a retail store. The fixed investment in the store is expected to be \$3.5 million. The investment can be depreciated over five years, after which point annual expenditures of \$300,000 will be sufficient to maintain the facility. These outlays can be expensed in the years they are made. The required investment in net working capital is expected to be 25 percent of annual sales. Variable cost is estimated to be 35 percent of sales.
 - a. If annual fixed costs other than depreciation total \$600,000, what is the cash flow breakeven point of the venture during the first five years? What is it after the fifth year? In either case, how does the cash flow breakeven point compare to the breakeven point of net income?
 - b. Suppose Lillian projects first-year sales of \$1 million, second-year sales of \$4 million, and sales after the second year of \$1.8 million. How much of an investment will be required to undertake the project? How much surplus cash is the venture expected to generate each year in the first six years of operation?
8. SIM Look back at Problem 7 and develop a 10-year simulation model that incorporates the following elements of uncertainty.
 - The level of sales in the first year is uncertain. The expected level is \$1 million, and the uncertainty can be represented as a normal distribution with a standard deviation of \$100,000.
 - The level of sales in the second year is expected to be \$3 million above the level in the first year. The uncertainty about the actual growth can be represented as a normal distribution with a standard deviation of \$200,000.
 - The level of sales in the third year is expected to be \$1.8 million with a standard deviation of actual growth of \$200,000.
 - After the third year, expected sales is equal to sales in the prior year, with uncertainty about the level being represented as a standard deviation of \$75,000.
 - The magnitude of the initial fixed investment is uncertain, with a mean of \$3.5 million and a standard deviation of \$200,000.
 - Working capital requirements increase when sales are higher than expected and decline if sales are lower than expected, but not to the same extent as the base investment in net working capital. The required level of net working capital is 25 percent of expected sales, plus 10 percent of the difference between actual and expected sales in any year (where the expected level of sales is determined based on actual sales in the prior year).
 - When demand is high, more merchandise can be sold with a full markup. When it is low, more discounting is required. The uncertainty of variable cost can be represented as a standard deviation of 2 percent applied to 35 percent of expected sales, plus 50 percent of the difference between actual and expected sales.
 - All other assumptions are the same as in Problem 7.

- a. Use the simulation model to estimate expected surplus cash in each of the first five years of operation. Be sure to include the amount of initial investment and required increases in net working capital. How much investment capital is needed each year (0 through 6), if performance is as expected? How much is needed each year to cover the results in 75 percent of the outcomes?
 - b. Are there any outcomes in your analysis in which the venture fails to achieve positive cash flow by year 6 and beyond? If so, and if Lillian would want to abandon the venture as soon as it becomes apparent that positive cash flows after year five are unlikely, how much initial investment capital is needed to pursue the venture? What criteria would you recommend for deciding whether to abandon the venture to meet this objective? Be as creative as you can in designing a response to this question.
9. What is the difference between a breakeven point measured in terms of net income and one measured in terms of cash flow? What factors would cause the two to be similar? What factors would cause them to be different?
10. Look back at the asset-driven models of performance in Problems 5 and 6. Suppose the probability of the scenario in Problem 5 is 0.4, and the probabilities of the optimistic and pessimistic scenarios in Problem 6 (a) and (b) are each 0.3.
- a. Consider an inside equity investment of \$5 million and initial outside equity levels of \$0, \$5 million (for 20 percent of total equity), \$10 million (for 40 percent of total equity), and \$15 million (for 60 percent of total equity). If all net income can be distributed beginning in year five, how does the entrepreneur fair in each scenario with each level of outside equity investment? What is the expected distribution to the entrepreneur? Which level of outside equity financing do you favor and why? (Plan your Excel work carefully, so you can easily explore these alternative strategies.)
 - b. Consider an initial inside equity investment of \$5 million, and debt to equity ratios of 0:1, 1:1, 2:1, and 3:1. If all net income can be distributed beginning in year five, how does the entrepreneur fair in each scenario with each level of outside debt investment? What is the expected distribution to the entrepreneur? Which level of outside debt financing do you favor and why?
 - c. Considering your answers in parts (a) and (b), do you favor equity or debt financing. Why? What, if any, changes in performance expectations would lead you to prefer the other form of outside financing (e.g., debt instead of equity)? Why?
11. Consider the iFree example in Section 8.4. Suppose that, instead of \$12, the price per subscription is only \$8. At the level of 25,000 subscribers, advertising revenue is expected to be \$9 per subscription; at 40,000 subscribers, it is expected to be \$9.50 per subscription; and at 55,000 subscriptions, it is expected to be \$10.25 per subscription. Variable expenses are expected to be \$22 per subscription at 25,000 subscribers, \$12 per subscriber at 40,000 subscribers, and \$10.75 at 55,000 subscribers. Other assumptions, those pertaining to fixed expenses, tax rate, depreciation, and capital replacement, are as shown in Figure 8.2.
- a. Revise Tables 8.1 and 8.2 to reflect the new assumptions.
 - b. Use the graphical technique discussed in Section 8.4 to estimate the venture's expected operating cash needs in each of the first three years, assuming that the venture expects 20,000 subscribers in the first year, 55,000 in the second year, and 95,000 in the third year. (Keep in mind that this estimate does not include the initial investment or investments in working capital necessitated by growth).

12. Reconsider Problem 11. Suppose the level of subscribers in each of the first three years could be 30 percent higher or lower than the expected level; variable cost per subscription in each year could be 20 percent higher or lower than the expected level; and advertising revenue per subscription in each year could be 20 percent higher or lower than expected. Construct a scenario analysis to assess the sensitivity of annual operating cash needs to these variations in performance.
13. SIM NewCompany learns some of the critical technology it needs for product development is available to license. Consider the following changes to the assumptions in the Section 8.6 NewCompany simulation:

- Development time and uncertainty are reduced: the month of development success is represented by the

Month	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
Prob.	5%	20%	30%	20%	5%

following discrete distribution:

Note that the probabilities sum to 80%; this means there is still a 20% chance development fails.

- The license fee for the technology is 3 percent of revenue, which is reflected in an increased Cost of Sales. Cost of Sales is uniformly distributed with minimum and maximum values of 48 and 58 percent respectively.
 - If development is not successful, the venture will be abandoned at the end of Month 12.
- Prepare a revised Figure 8.4 using the new assumptions. How do you interpret the differences between your figure and the original Figure 8.4?
 - Discuss the pros and cons of licensing some of the technology (versus developing everything in house).
 - The entrepreneur has \$100,000 to invest in the venture and approaches you as a potential outside investor. Based on the simulation results, what level of funding would you be willing to provide? Why?