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Chapter 15

Raising Capital and Capital Structure

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“Give me a lever...”

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Give me a lever long enough and a place to stand, and I shall move the world.

- Archimedes

Archimedes may have been explaining the power of physical levers, but his sentiment is just as apropos when discussing leverage caused by employing debt to finance companies. A little leverage is a powerful thing, and companies with access to debt capital can utilize it to grow a spark of income into an inferno of profitability. With debt, however, comes risk, and a capital structure that might work for one firm might be perilous for another. Even the same company, throughout its lifespan, can have different needs and access to capital markets.

15.1 Life Cycle of a Firm

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LEARNING OBJECTIVE

1. Describe potential sources of investment for a growing firm.

Many companies are founded with no more capital than what a proprietor has on hand. Some will use inherited money or resources saved from a successful career in another occupation. A mortgaged house is often the collateral used to provide the initial funding for a myriad of small businesses. A proprietor will invest their **sweat equity**¹ in the form of working for long hours with little or no initial compensation, as the fledgling business demands a reinvestment of initial profits. In this embryonic stage, many small businesses fail or stagnate, but some will thrive and grow, leading to different problems and needs.

An owner of a small but growing business will often face the question of how quickly growth can be sustained. Conservative growth might cause lost business to competitors or foregone sales from customers whose demand can't be met. Aggressive growth demands more capital and can potentially lead to over-reaching and a stretching of resources too thinly. Fortunately, developed economies can provide sources of capital for growing businesses to the potential benefit of current owners and new investors.

The first avenue for many entrepreneurs seeking capital is a small business loan from a bank. By taking on debt for a negotiated interest rate and repayment schedule, a cash-hungry business can expand without a reduction in an owner's control. Many banks also provide services for small businesses, such as treasury management, payroll administration, or bill collection services.

1. An owner of a company investing in a company by working for long hours with little or no initial compensation.

Particularly in service type professions, partnerships are also way for businesses to expand, bringing in capital, more skilled labor, or both. Lawyers, doctors, accountants, and dentists, among others, are common partnership candidates, as a growing customer base can tax the professional and capital resources of a sole

proprietor. Sometimes partners bring a different skill set than the existing owners, perhaps managing the “business” end of operations. And some partners will prefer to be “silent” partners, contributing capital only but enjoying the limited liability of such an arrangement.

Venture capital (VC)² firms are a different avenue for start-ups; these firms seek out investments in young companies, typically matching with investors who are looking for a private equity arrangement. Different VC firms specialize in different types of companies, and can also specialize in different stages of a company’s growth. For example, some firms focus on the first rounds of funding (sometimes called “**A**” **round financing**³) and some provide **mezzanine financing**⁴ (typically a hybrid of debt that can potentially be converted to equity). Other venture capital firms specialize on distressed companies, making investments with the intention of turning around the business to make it again successful.

As a company continues to grow, other avenues of capital become possibilities. Bonds can be issued, either through a private placement to large investors (typically pensions, endowments, or similar investment funds) or publicly. A public bond issuance in the US requires registration with the SEC, and is typically underwritten by investment banks (often as part of a syndicate of banks).

While shares of stock can be privately placed, a milestone for large companies comes when their shares are first registered with the SEC (or other authority, outside the US) and offered for public sale through a process called the **initial public offering (IPO)**⁵. Since the cost of meeting regulations, including annual and quarterly reports, can be prohibitive, a corporation needs a certain level of maturity to make a successful IPO a possibility. After “going public”, VC firms and other early investors can more easily exit their ownership positions, typically after a required holding period. At this stage, though relatively mature, a company might still grow at a fast pace, but has access through many different avenues of capital.

2. Firms that seek out investments in young companies, typically matching with investors who are looking for a private equity arrangement.
3. The earliest rounds of venture funding.
4. Venture funding after the earliest round of venture funding, typically a hybrid of debt that can potentially be converted to equity.
5. When shares of a corporation are first registered with the SEC (or other authority, outside the US) and offered for public sale.

KEY TAKEAWAYS

- Proprietors and partners supply the capital for very young companies, often in the form of “sweat” equity.
- Bank loans and venture capital funding can bring in capital for a growing business.
- Public issues of bonds and stocks are the sources of capital for maturing companies.

EXERCISES

1. Frances owns a bake shop. A new dessert he recently developed is meeting with great customer demand, and he would like to consider expanding his operations. Contrast some financing possibilities for Frances, discussing which is most feasible.

15.2 Leverage

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LEARNING OBJECTIVES

1. Explain the effects of leverage on variability of returns.
2. Define and calculate degree of operating leverage and degree of financial leverage.

Little Jamie wants to put out a lemonade stand, to take advantage of the hot weather. She has \$5 in her piggy bank with which to buy supplies. She expects to be able to sell that amount of lemonade for \$10, for a nice \$5 profit. But she knows that she could sell even more lemonade if she could afford to buy more supplies, so she asks her mother for a loan of \$5. Now, with \$10 of supplies, she can generate \$20 worth of sales! After paying back her mother, she'll have \$15 left, for a profit of \$10!

Unfortunately, little Jamie has terrible luck, and a summer thunderstorm roars through the neighborhood, scattering her supplies and ruining her product. She had only sold \$2 worth of lemonade before the storm. In tears, she offers the \$2 to her mother, knowing that she has lost her own \$5 and can't even return what she borrowed. The loving mother consoles her daughter, and tells her that she can try again when the weather turns better.

Little Jamie has learned some important lessons from this experience (and, thankfully, her mother is more generous than most banks would be!). The first is that, by borrowing money, she has the potential for a larger reward for her invested capital (\$10 profit vs. \$5 profit). The second lesson is that not everything goes exactly to plan, leading to the third lesson: when the business was in trouble, she lost more money because she borrowed. If she had only used her own money, she would have only lost \$3 (her \$5 investment less the \$2 she took in before the storm). Since she borrowed, she lost her entire investment, plus most of her mother's to boot (debt holders, barring maternal love, have claims to the money before the equity holders)! This effect, in which debt increases the variability of potential returns, we call **leverage**⁶.

6. The effect in which debt increases the variability of potential returns.

Leverage isn't only caused by debt: any time we take on fixed costs, we increase our risk. If we purchase a new machine that is able to make our product more cheaply, we need to be certain that we'll sell enough product to make the purchase worthwhile. If we sell more, then the added efficiency will increase our potential for profit. Or we might choose to build our own warehouse rather than pay for storage space. If business drops, we'll be stuck with an empty warehouse, but still have the warehouse payments. Typically we call this leverage caused by fixed costs of operations **operating leverage**⁷ (as opposed to leverage caused by borrowing, which we call **financial leverage**⁸). The firm's total leverage is a combination of the two.

Equation 15.1 Degree of Operating Leverage

$$\text{Degree of Operating Leverage} = \frac{\% \text{ change in EBIT}}{\% \text{ change in Revenues}}$$

Equation 15.2 Degree of Financial Leverage

$$\text{Degree of Financial Leverage} = \frac{\% \text{ change in Net Income}}{\% \text{ change in EBIT}}$$

Equation 15.3 Degree of Total Leverage

$$\begin{aligned} \text{Degree of Total Leverage} &= \frac{\% \text{ change in Net Income}}{\% \text{ change in Revenues}} \\ &= \text{Degree of Operating Leverage} \times \text{Degree of Financial Leverage} \end{aligned}$$

KEY TAKEAWAYS

- Leverage increases potential gains and potential losses.
- Operating leverage is caused by large fixed costs.
- Financial leverage is caused by interest payments due to debt.

7. Leverage caused by fixed costs of operations.

8. Leverage caused by borrowing.

EXERCISES

1. A manager believes that her company will do extremely well in the upcoming year, surpassing others' expectations. Should she increase or decrease her leverage?
2. A firm believes that if sales increase by 2%, their EBIT will increase by 3%. What is their degree of operating leverage?
3. A firm believes that if sales increase by 3%, their Net Income will increase by 5%. What is their degree of total leverage?

15.3 Capital Structure

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LEARNING OBJECTIVE

1. Explain why capital structure decisions influence firm valuation.

The mix of debt and equity that a firm uses to finance its operations is called its **capital structure**⁹. The more debt employed, the more leverage a firm will have, and the larger the potential variation in earnings for shareholders. But there are other factors involved which can also affect what is the optimal capital structure for a firm.

The largest factor will be the firm's confidence in being able to make timely debt payments. Different businesses lend themselves to very different capital structures. A company with a steady customer base, large amounts of fixed capital or other good collateral, and insensitivity to the business cycle and other shocks to revenue all will point to a company having the capacity for more debt. The paragon of such a company would be a utility company: revenues will be very steady, since even financially strapped customers don't want to freeze in the winter. Companies with uncertain, highly-variable revenues or a lack of good collateral will not be able to raise as much debt financing.

Another key factor is that interest paid on debt is tax deductible in most countries. If all else were equal, companies would probably choose to carry more debt vs. less debt because of the tax benefits.

Too much debt, however, and the costs of additional debt can outweigh the tax benefits. As debt level increases, so does the cost of debt that investors will charge in higher expected yields. The added risk is also a factor for equity investors: leverage multiplies the systematic risk of a company, causing investors to demand a higher return on equity. Potential financial distress can also cause a loss of customers (who wants to buy a car with a warranty if the company won't be around

9. The mix of debt and equity that a firm uses to finance its operations.

to back it up) or suppliers (will the company be able to pay for the raw materials received?).

In theory, every project should be evaluated with a WACC using a capital structure utilizing costs of capital that reflect the risks of the project considered. Likewise, the capital structure (that is, weights) utilized in the calculation should ideally reflect the optimal mix for the marginal capital required for the project. In reality, most firms determine their target capital structure based on the overall nature of the firm's operations, and only consider the effects of specific projects if they are relatively larger in scale (for example, if a large capital purchase would provide collateral that would facilitate more debt).

KEY TAKEAWAYS

- Since debt is typically tax deductible, in addition to having a lower cost of capital, there is a benefit to having some debt.
- As debt increases, the chance of bankruptcy causes the cost of both debt and equity to rise.

EXERCISE

1. If there was a zero chance of a firm ever going bankrupt, what would be the likely level of debt employed by the firm?

15.4 Choosing the Optimal Capital Structure

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LEARNING OBJECTIVES

1. Describe the process of determining the optimal capital structure.
2. Given costs of capital for various capital structures, determine the optimal capital structure for a firm.

Primarily, the choice of capital structure affects the cost of capital for each of the components of WACC. On the whole, companies tend to avoid the extreme amounts of debt that can have drastic influence on operating cash flows; only in extremely distressed companies do we need to consider significant changes to free cash flows. Therefore, the decision on optimizing capital structure is relatively independent from capital budgeting decisions.

Specifically, it is a goal of financial managers to choose a capital structure that minimizes WACC, which will, in turn, maximize the value of the firm. Since our WACC is the basis for discounting used in finding the NPV of projects (or the hurdle rate with which IRR is compared), a lower WACC will increase the value of our conventional positive NPV projects, and cause some conventional projects that were originally rejected to cross the threshold into value-adding propositions.

Consider the following projections by financial managers at firm XYZ:

Table 15.1 Cost of Capital Projections

% debt	cost of debt	after-tax cost of debt	% equity	cost of equity	WACC
0%	5.0%	3.0%	100%	7.0%	7.00%
10%	5.0%	3.0%	90%	7.3%	6.84%
20%	5.2%	3.1%	80%	7.6%	6.70%
30%	5.5%	3.3%	70%	8.0%	6.61%

% debt	cost of debt	after-tax cost of debt	% equity	cost of equity	WACC
40%	5.8%	3.5%	60%	8.6%	6.55%
50%	6.2%	3.7%	50%	9.4%	6.56%
60%	6.8%	4.1%	40%	10.6%	6.69%
70%	7.5%	4.5%	30%	12.6%	6.93%
80%	8.5%	5.1%	20%	16.6%	7.40%
90%	10.0%	6.0%	10%	28.6%	8.26%
100%	16.0%	9.6%	0%	45.0%	9.60%

Assuming firm XYZ's tax rate to be 40% and given the projected costs of capital at each level of debt and equity, we can see that WACC is minimized at a 40%/60% debt/equity mix. Below this mix, we aren't utilizing enough of the cheaper debt. Above this level, the increased costs of both debt and equity cause WACC to increase as we add more debt to the mix.

In practice, we are rarely able to precisely know what the cost of capital will be for our company at specific levels of debt. We can create estimates based upon observed costs at other companies, but short of trying a new capital structure, it is impossible to know for certain what the precise WACC will be.

KEY TAKEAWAY

- The optimal capital structure is the one that maximizes firm value by minimizing WACC.

EXERCISE

1. What is the optimal level of debt given the following projected WACC values:

0% debt = 7.8% WACC

10% debt = 7.5% WACC

20% debt = 7.4% WACC

30% debt = 7.3% WACC

40% debt = 7.4% WACC

50% debt = 7.6% WACC

60% debt = 8% WACC

70% debt = 8.6% WACC

80% debt = 10% WACC

15.5 The Bigger Picture

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LEARNING OBJECTIVES

1. Describe how capital structure decisions can influence firm value.
2. Explain some ethical consideration surrounding capital structure decisions.

While there is potential to increase a firm's value by tweaking the target capital structure, most managers believe the bulk of value-added results will come from proper capital budgeting decisions. Nevertheless, it is important to consider the tradeoffs involved in adding more financial leverage.

Ethical Considerations

Leverage creates risk, and some would argue that firms, in general, tend to take on too much. Since many stakeholders are adversely affected when a firm is near bankruptcy, it seems that caution should be practised when determining how much debt can be safely utilized. In some cultures, the very practice of loaning money for interest is considered immoral (and can even be illegal!), necessitating a larger use of equity financing.

If a manager is compensated for outperformance only, they might have an incentive to take on too much leverage! Consider an extreme case of a manager that will be fired if the firm underperforms, but will be compensated positively relative to the degree of outperformance should the firm exceed expectations. Since leverage will magnify both the gains and losses, the manager may seek higher leverage to reap greater rewards if the firm has a good year. If the firm has a poor year, the leverage will cause a worse result, but either way the manager can only be fired once!

Another concern with leverage is that firms can employ strategies intended to mask the true degree of leverage employed. Strategies to move debt "off the balance

sheet” could potentially mislead investors as to the degree of risk, causing them to seek too low of a return.

KEY TAKEAWAY

- Leverage adds risk to a company, so the ethical manager needs to consider what is most appropriate for the all the stakeholders.

EXERCISE

1. A manager believes that her company will do extremely well in the upcoming year, surpassing others’ expectations. If she is wrong, however, added leverage could cause the company to enter financial distress in a year of poor performance. What ethical considerations should be considered?

15.6 End-of-Chapter Problems

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End-of-Chapter Exercises

- 1.
- 2.
- 3.
- 4.
- 5.