Capital Structure: Financial Distress and Information Issues

(Welch, Chapter 19)

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Did you bring your calculator? Did you read these notes and the chapter ahead of time?

What determines $E(R_{EQ})$ and $E(R_{DT})$ from the manager's perspective?

Should managers/owners maximize P/E?

Thought Experiment

- You own the entire firm today.
- You are going to sell the firm (e.g., in an IPO) tomorrow.
- Your goal is to maximize your wealth.
- Your tools are the corporate setup, charter, capital structure, anything.

If your **corporate setup** means that, in the future, you will get \$1m less in one particular state of nature (that occurs with probability p), or equivalently that you will not take a \$1m-NPV project that you should have taken (with probability p, this project appears), then how would this change your wealth today?

Why should you, the owner-entrepreneur, care about your corporate charter, and costs to creditors and shareholders in the future? If your structure means you may not take all positive NPV projects in the future, does it hurt you or your (IPO share) purchasers (the equity then) tomorrow?

In a **perfect** market, assume a firm will be worth \$60 with 20% probability or \$110 with probability 80%. Assume the interest rate is zero. (This only makes calculations quicker.) Which capital structure is better for firm value—one that promises \$80 or one that promises \$40 in debt repayment?

In an **imperfect** market, if there is a dead-weight cost everytime a firm goes bankrupt or is close to going bankrupt, what capital structure is best? (Note: the dead-weight cost is dissipative, not redistributive from shareholders to creditors.)

Assume that **direct** legal fees in bankruptcy are 2% of firm asset value. If there are no countervailing forces, what would be the optimal capital structure?

How big are direct costs? How strong is the force?

For a **large** industrial firm:

- Say a healthy industrial firm has assets of \$100 billion toady.
- Say there is a 5% probability of bankruptcy.
  - About 5 Fortune-100 companies went under in the extreme financial crisis of 2007-9 (WaMu Sep08 (\$328b in assets), Lehman Sep08 (\$691b), GM (\$91b).) Chrysler was only \$37b. Bear Stearns did not go bankrupt.
- Say when going bankrupt, the firm is worth only \$20 billion.
- Say lawyers get 2% of the bankrupt assets in legal fees.

Then, the expected cost of legal fees would be $\$20\text{b} \cdot 5\% \cdot 2\% \approx \$20\text{m}$. \$20 million pays for a lot of lawyers, but it is only 0.02% of the \$100 billion firm value today. The force pulling towards equity is weak.

Direct legal fees are much higher for smaller firms, however.

Assume that your customers are afraid of bankruptcy, because their product warranties can be voided. If there are no countervailing forces, what would be your firm's optimal capital structure?

Digression: What would you do if you are a bank trader and you just learned that you may be underwater. Would you take more risky or less risky bets? Would you take negative NPV bets?

Ex-post, if the firm has taken on a lot of debt, does equity prefer risky bets?

Assume that much financial distress makes your firm more vulnerable to competitors. How will this affect your optimal capital structure today?

What would you do if your mortgage is just a little underwater (not enough to walk away entirely), and you have just learned that your roof has a water leak?

If you are the RIM CEO and you just learned that Blackberries have become obsolete, what should you do? Should you spend the money on R&D for Blackberry Playbooks?

What do you think is the expected cost of financial distress in a healthy, typical industrial company? What do you think it is in a financially distressed financial services firm, or a car firm?

What kind of capital structures do most real direct or indirect distress costs favor?

Important

Many debt-caused problems are strong self-fulfilling prophesies.

- If you are far from the debt threshold, you often internalize both losses and gains. you probably want to take only positive NPV projects.
- If you get closer to the debt threshold, your risk-taking incentives increase. you may take some mild negative NPV projects.
- If you are under the debt threshold, your risk-taking incentives can become huge. you may take really, really bad negative NPV projects.

Similar issues arise from other debt costs, such as customers and suppliers fleeing your firm.

For modest debt amounts, far away from distress, the costs may be trivial. ("Convex")

EXCEPTION: Assume that debt commits your firm to fighting entrants into your industry. How will this affect your optimal capital structure today?

Switch

- Above was mostly bad times.
- Below is mostly good times.

Is there a relation between managerial pay and firm size? As a manager, do you prefer running a bigger company or a smaller company?

Who gets the most out of the surplus generated in mergers and takeovers? Are mergers good news for shareholders? Are they good news for managers?

What kind of capital structures reduce overpriced acquisitions?

If you are the CEO/CB, would you prefer investing your free cash flow into a corporate jet or into a bond that pays shareholders 5%?

If you are a manager of a profitable automobile company, would you rather spend your time fighting union demands for higher pension promises, or would you rather just give in?

What could make managers less inclined to purchase corporate jets and more inclined to fight unions?

Don't Blame (Just) The Unions!

- They have good aspects and bad aspects.
- GM+ were ruined by bad management, not bad unions. The unions did what they were supposed to do (at least up to a point). It was management that shirked its job, not the unions.
- Personal views:
  - The big problem with unions is not the redistribution from shareholders (healthcare, salaries, etc.), but the terribly inefficient work rules they often negotiate—the fact that bad employees are difficult to fire, and good employees are difficult to reward. (Hello, UC System.)
  - IMHO, salary increases in good times should be given in the form of equity to make unions more interested in firm performance.
  - Private-company unions often realize that they have a stake in the corporation thriving. But public sector unions are bad news. Their members are one-issue voters who vote. For example, teacher unions are principally responsible for the poor performance of our K-12 schooling system.

What kind of capital structure reduces corporate jet fleets and grandiose marble headquarters?

In a perfect market, a firm is worth either \$100 or \$200 next year with equal probability. It asks you for financing by debt that is promising to pay \$100 next year. The interest rate is $r = 0$. Would you be willing to extend credit for the \$100 bond to this firm at a price of \$99.99? [What is the value of equity?]

Of course, anyone (including you) can always find independent risky negative-NPV projects—say, a project that costs \$0 and pays off –\$50 or \$40 next year with equal probability. Should/would the firm ever take such a bad project?

Ask again: Who would be willing to extend credit for the $100 bond to this firm at a price of $99.99?

What can the firm do to raise debt at a more advantageous interest rate?

What are typical bond covenants?

Let's presume you just issued a bond with a covenant that says that you cannot take risky projects in the future. Is this a good idea?

Covenants

Covenants are a delicate balancing act between

- preventing you from wanting to take bad projects ex-post *because* they shift risk from shareholders to bondholders;
- and preventing you from taking good projects ex-post.

Any other ideas for creditors?

Any other ideas for managers on how to expropriate debt to help equity?

Do firms write covenants only when they issue bank debt, where the bank can insist on them being included? Or do firms institute covenants when they issue public debt (where the creditors have no power to negotiate with the firm)?

What kind of capital structures are more expensive to set up—debt heavy or equity heavy—if risk-shifting is a problem?

The interest rate is 0. You are an entrepreneur. You have an opportunity to develop an oil field, which has a 50% chance of success, in which case it will be worth \$500k. If it fails, it will be worth only the land price of \$100k. Assume you have no special information. It costs \$100k to put up the drill rig, but you have no money. To finance the rig, how much **debt** would you have to sell?

What if instead of debt, you raised equity? How much of the firm would you have to sell? What would be the value of your equity?

Which capital structure is better?

As before, but assume that you, the entrepreneur, already know whether there is oil in the ground. (And presume you like drilling, because it gives you private benefits.)

- How much would you have to promise debt if you wanted to debt-finance?
- How much would you have to promise equity if you wanted to equity-finance?

At what terms could you issue equity?

What if you have cash in your bank account? Or, if it is known that there is cash in your parents' bank account?

What is the bottle with cash worth? Let's auction it.

What kind of capital structures does the presence of inside information issues favor?

Liquidity and Transaction Costs

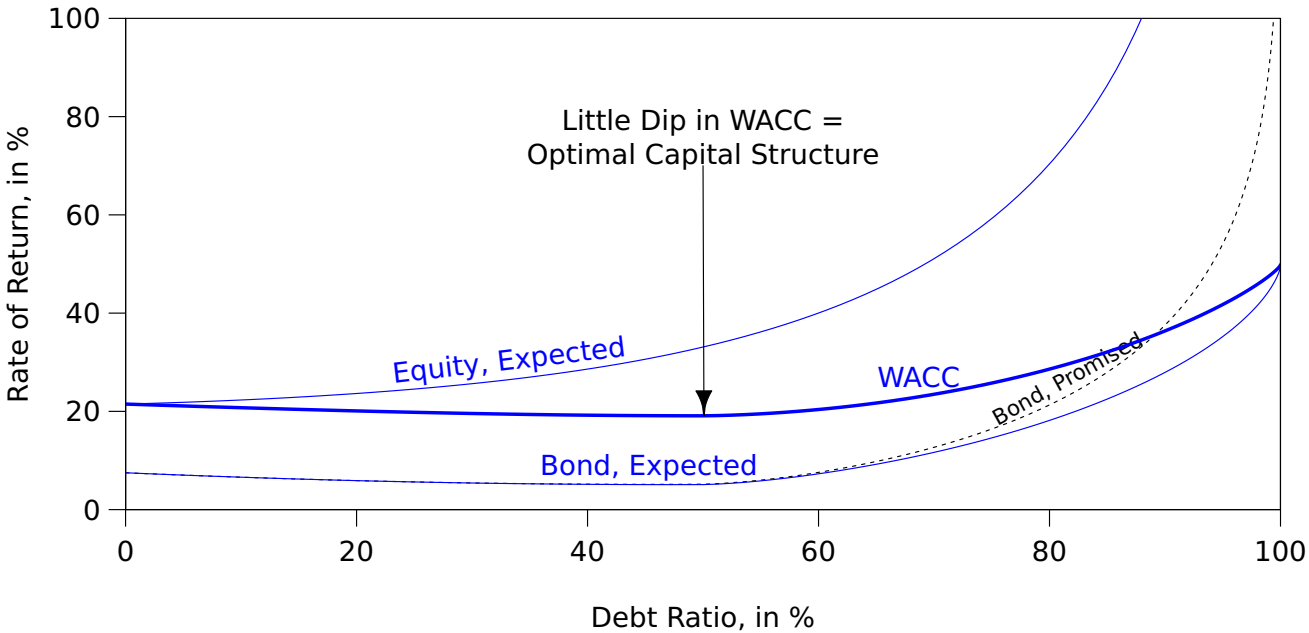
As a capital-structure consultant, working for an investment bank, how will you convince your client corporate management that debt is good for their shareholders because it constrains the firm's future ability to waste funds?

Summary

Effect	Does Favor
Unmitigated Agency Conflicts	Equity

Effect	Should Favor
Financial Distress Costs	Usually Equity
Personal Income Taxes	Equity
Debt Expropriation	Equity
Corporate Income Taxes	Debt
Too Much Cash Flow (Mitigating Agency Conflicts)	Debt
Inside Information	Debt
Behavioral Finance	Situation-Dependent
Transaction Costs	Situation-Dependent

WACC with other costs



- I made up the function. There are no good formulas here.
- With transaction costs, in particular, it is not uncommon for the optimum to be fairly flat.
- From a managerial perspective, this would suggest that you do not want to be too far off, but also that the optimal capital structure is not a first-order issue about which you should fret every day.

Conceptual WACC graph