Capital Structure in Imperfect Markets – Other than Corporate Taxes

- We already know how to handle taxes at the "back-end" —corporate income taxes.
- Now we want to handle personal income taxes and other issues at the "front-end." This determine $\mathcal{E}(\tilde{r}_E)$ and $\mathcal{E}(\tilde{r}_D)$.

What Matters?

- Value matters.
- P/E, EPS, CEO Name, etc., are peripheral. The matter only if they can create value. They do not matter if they themselves derive from value.

  (For example, P/E can be higher if value is higher. This does not mean that a manager should maximize P/E.

Tax Code Recap

- Capital gains are effectively taxed at lower rates.
  - The statutory tax rate is lower. (The Bush tax cuts have almost eliminated this "double taxation.")
  - Capital gains taxation occurs only at realization, not in the interim. (Still in effect.)
  - Can be offset with capital losses. Still in effect.

- Interest receipts are taxed at ordinary income tax rate (unless they are from tax-exempt munis, which corporations cannot issue).

Thought Experiment

- As a family, you own the economy. The less Uncle Sam gets, the more you get.
- Your corporate economy is owned by the family consists of two firms:
  - One firm is a cash cow, low-growth, producing tons of profits, and in the high corporate income tax bracket: 30%.
  - One fast-growing firm (or firm with large tax credits), and in the low corporate income tax bracket: 0%.
- Your family economy consists of two parties:
  - Yourself — an individual taxed at the highest personal income tax rate: 40%. "Retail."
  - Your spouse — a tax-exempt individual "stands in" for tax-exempt institutions and pension vehicles.

  (Assume that capital gains are taxed at around 10%.)
- For either type of firm, you can choose the method of payout.
- For both investors, you can determine which firm you should hold.
- Play Sim City! (Or Heinlein's puppet-master!)

Q1: How can you minimize your losses to Uncle Sam?

Distinguish between taxable income and tax rate. Growth firms have zero tax rate, not necessarily zero taxable income.

Allocate investors (retail, non-profit), securities (debt, equity), and firms (cash cow, growth firm). Cash cow has $100 in taxable earnings, which could be paid out in the form of interest. Assume equity means capital gain.

Cash Cow, Debt, Retail; Growth Firm, Equity, Non-profit Uncle Sam

Cash Cow, Equity, Retail; Growth Firm, Debt, Non-profit Uncle Sam

Cash Cow, Debt, Non-Profit; Growth Firm, Equity, Retail Uncle Sam

Cash Cow, Equity, Non-Profit; Growth Firm, Debt, Retail Uncle Sam

Reminder: Corporate Income Tax Rate=30%. Personal Income Tax Rate=40%. Effective Capital Gains Tax Rate=10%.

Q2: How is this arranged in the real world?

Q3: What calibrated the movement of tax-exempt investors towards Treasury bonds and tax-exempt investors towards muni bonds?

Q4: Write down the WACC formula, *from memory*!

Q5: How do you adjust the WACC or APV formulas for personal taxes?

RECAP: Considerations

Take the perspective of a firm to be set up today with a charter that maximizes what you can sell the firm for. If your charter gets the firm to take all the right projects and not waste any money, you can sell this firm for more money—after all, our firm's purchasers are not stupid.

If you set the charter at the outset so that the firm will have the capital structure that makes it act best in the future, you can sell it for the highest amount of money to investors.

Important: Everything that makes it less likely that the firm will follow the optimal investment plan in the future lowers firm value today.

Bad Times and Capstruct 18-3

(Financial Distress Costs) 18-2.A

- Direct and Indirect Costs.

  Note: Redistribution is *not* a cost to the firm!

  Q6: What is an indirect cost of bankruptcy?

  18-2.D

- (Strategics.)

  Q7: When does this matter? 18-2.B

- Underinvestment.

  Q8: What is this, and when does this matter?

- Failure to Liquidate. (Though perhaps a sign of times that are still too goo.) 18-2.C

  Q9: When does this matter?

Q10: What form of financing do these favor?

LIMITS:

- Rough expected costs of financial distress for a Fortune-500 firm

Good Times and Capstruct 18-4

(Operating Distortions. (Moral Hazard.)) 18-4A

- Over-investment into less profitable ventures (Empire Building).

Q11: What is this and when does this matter?

18-4B

- Free Cash Flow.

Q12: What is this and when does this matter?

Talk about Barry Nalebuff's excursion in the GE airfleet on the Honeywell merger. (Honest Tea, too.) Talk about PepsiCo corporate pilot.

- Extortion by Stakeholders
- Higher Managerial Stake.

Q13: What form of financing do these favor?

Bondholder Assurances

18-5

18-5A

- Risk-changes [Option Feature];

Q14: When does this matter?

18-5B

- Issuance of Equal-Priority Debt;

Q15: When does this matter?

- **Q16:** How do bondholders protect themselves?

- **Q17:** If bondholders protext themselves, do equity holders face a potential problem?

Q18: What form of financing do these favor?

Inside Information (Adverse Selection)

- Upside Sharing vs. Downside Sharing.

Q19: What is this and when does this matter?

Q20: What form of financing does adverse selection favor?

Three connected phenomena: Inside Information, Pecking Order, Financing Pyramid.

- Inside information can cause a Pecking Order, but so can any other story in which equity is more expensive than debt.
- Pecking Order can cause a Financing Pyramid (where the firm is financed by big chunks of leverage at the bottom, and a little piece of equity at the top), but stock price changes (value changes) can mean that firms following Pecking Order end up with very little debt.

Transaction Costs + Behavioral Issues.

18-7

- Underlying everything.
- Known to matter.

18-6

- Interactions (How to Get From Here to There).

18-7

- Reputation.

Summary and WACC view of optimal Capital Structure

18-8

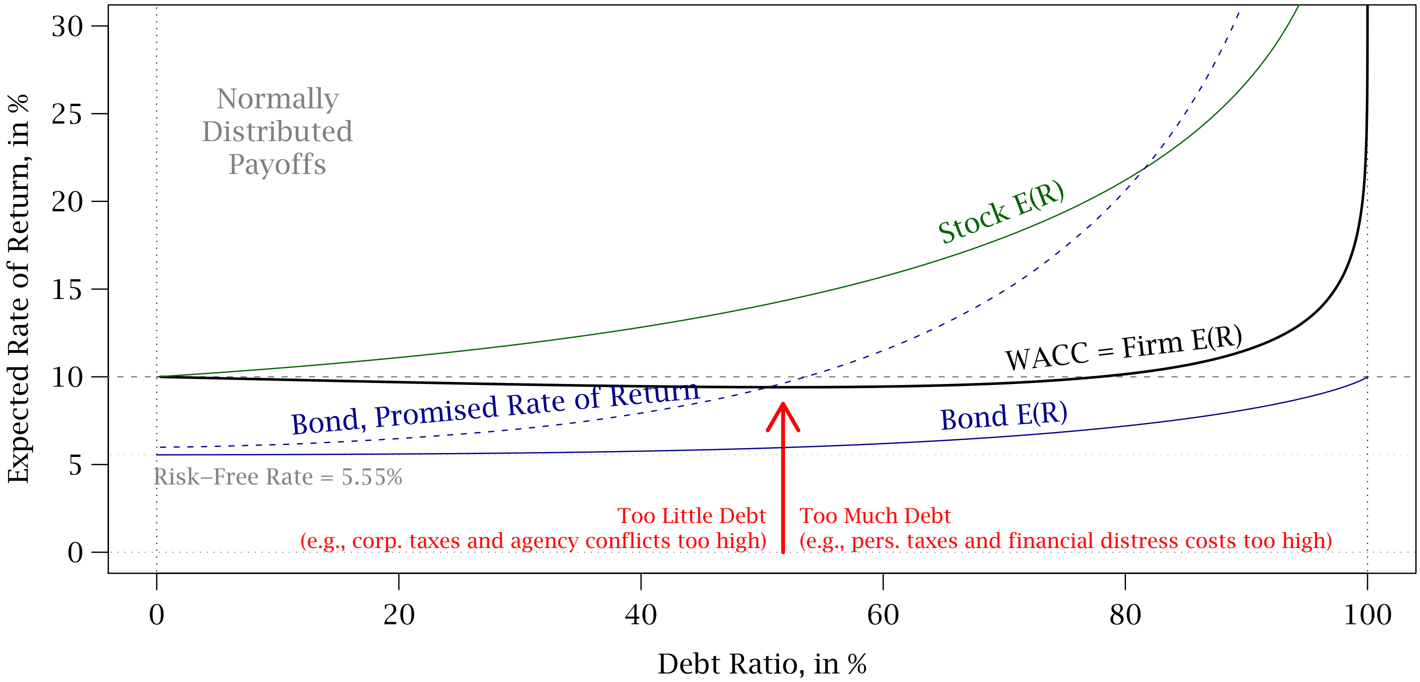
Effect	Does Favor
Unmitigated Agency Conflicts	Equity

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

18-9

- Adjustments can be difficult to make, especially in financial distress.
- Reputation can help.

WACC Perspective



- 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.

WACC Concept

$80

Project Value in Imperfect Markets

$100 = Perfect Market's Project Value

− **$20** All Existing Distortions, Problems, Costs

e.g., taxes, distress costs, transaction costs, skepticism, etc., that could not be eliminated by clever managing and financial markets.

$70 = Project Value Under All Distortions, as if totally unmitigated

\+ **$10** The Net Of All Remedies To Mitigate Distortions

$2 Good Equity Effects

e.g., its reduction in expected distress costs

$3 Good Debt Effects

e.g., signals higher quality, lower issuing costs, etc.

$5 the corporate income tax deduction

$80 APV = **$75** NPV of Cash Flows

- ignoring corporate income tax mitigation due to debt;*
- but taking into account all other mitigating factors.

\+ **$5** NPV of Corporate Income Tax Shelter arising from the presence of debt

Homework Assignment

1. Reread Chapter 18.
2. Read Chapter 19.
3. Hand in all Chapter 18 end-of-chapter problems, due in 7 days.