

Chapter 16: Financial Distress, Managerial Incentives, and Information

I. Basic Ideas

1. As debt increases, chance of bankruptcy increases

=> **bankruptcy costs make debt less attractive**

2. As debt increases, creditors become more concerned that stockholders will try to exploit them

=> **decrease in issue price (increase in interest rates) makes debt less attractive**

3. Debt motivates managers to work harder for stockholders

=> **makes debt more attractive**

4. Capital structure changes reveal management's private information about the firm

=> **debt issues reveal management's confidence**

=> **equity issues reveal management's belief that equity is overvalued**

II. The Costs of Bankruptcy and Financial Distress

Note: In perfect markets, bankruptcy does not affect capital structure decisions

Reason: creditors simply take control of the firm

=> no loss of value

=> no cost

=> need to look at cash flows that go to someone besides stockholders and creditors in bankruptcy

A. Direct Costs of Bankruptcy

Direct costs: **costs stemming from the bankruptcy process**

Primary source of costs: **cost to hire outside experts**

Ex. **accountants, lawyers, investment bankers**

Results of studies of average cost as a percent of pre-bankruptcy value: **3-4% but 12% for small firms**

=> *many of costs fixed*

B. Indirect Costs of Financial Distress

Indirect costs: **costs to the firm associated with an increased chance of bankruptcy**

Notes:

- 1) **stem from changes in behavior towards the firm**
- 2) difficult to measure

Examples - loss of:

customers
suppliers and trade credit
best employees
payments from customers
asset value as sold in fire sale of assets
value as management fights bankruptcy rather than maximizing value
value for creditors as firm defaults on what owed them

Results of studies of indirect financial distress costs: **10-20% of firm value**

C. Expected Financial Distress Costs

Expected Financial Distress Costs = probability of distress x financial distress costs

$$\Rightarrow E(\text{FDC}) = p \times \text{FDC}$$

Notes:

- 1) p = probability of financial distress
- 2) FDC = financial distress costs
- 3) Probability of distress increases with:
 - a) **amount of debt relative to cash flow and assets**
 - b) **volatility of cash flows and asset values**
- 4) **Distress costs vary by industry and firm**

III. Agency and Debt

Agency: conflicts of interest within the firm

=> conflicts primarily stem from an unequal sharing of the costs and benefits of some action

A. Stockholder-Bondholder Conflict and the Agency Cost of Debt

Note: all of the following issues are more significant if the firm is in financial distress

1. Excessive Risk Taking

Basic idea: **shareholders may gain at the expense of bondholders if the firm invests in high risk projects even if the project has a negative NPV**

Reason: **unequal sharing of upside and downside of risk**

2) Bondholder claim: **fixed**

=> downside risk: **hurts them**

=> upside risk: **doesn't really help them.**

2) Stockholder claim: **residual with limited liability**

=> upside risk: **stockholders benefit from upside**

=> downside risk: **doesn't hurt once value falls below what owed the creditors**

=> *net result: stockholders prefer high risk while bondholders prefer low risk*

Ex. Assume two projects cost \$100 each. Assume also that there is a 50% chance that Project #1 will pay off \$120 immediately and a 50% chance that Project #1 will pay off \$90 immediately. Finally, assume that there is a 50% chance that Project #2 will pay off \$121 immediately and a 50% chance that Project #2 will pay off \$0.

Q: Which is the better project for stockholders if no debt?

Q: Which is the better project for stockholders if firm owes \$100 to bondholders?

	Project 1			Project 2			Difference		
	Good	Poor	Expected	Good	Poor	Expected	Good	Poor	Expected
Finance with Stock									
Payoff to stockholders	120	90	105	121	0	60.5	+1	-90	-44.5
Financed with debt and equity									
Payoff to bondholders	100	90	95	100	0	50	0	-90	-45
Payoff to stockholders	20	0	10	21	0	10.5	+1	0	0.5

2. Under-investment in positive NPV projects

Basic idea: **stockholders MAY prefer the firm reject positive NPV projects**

Notes:

1) **if default is likely, bondholders get much (even all) of the project's benefit**

=> *bondholders paid first*

=> **stockholders may have net loss if they provide funding**

2) **problem can be solved if can get creditors to help fund the project**

=> *will be hard to do since default already likely*

Ex. Assume a firm has no cash but existing assets that have a 50% chance of paying \$120 and a 50% chance of paying \$80. A project costing \$10 will provide an immediate risk-free payoff of \$20.

Q: Will stockholders provide funding so project can be accepted if no debt?

Q: Will stockholders provide funding so project can be accepted if firm owes \$130 to bondholders?

Q: Will bondholders provide funding for the project?

	Without			With			Difference		
	Good	Poor	Expected	Good	Poor	Expected	Good	Poor	Expected
Firm financed with stock									
Payoff to stockholders	120	80	100	140	100	120	+20	+20	+20
Profit/loss to stockholders							+10	+10	+10
Firm financed with debt and equity									
Payoff to bondholders	120	80	100	130	100	115	+10	+20	+15
Payoff to stockholders	0	0	0	10	0	5	+10	0	+5
Profit/loss to stockholders							0	-10	-5
Bondholders provide \$9 of financing									
Payoff to bondholders	120	80	100	130	100	115	+10	+20	+15
Profit/loss to bondholders							+1	+11	+6
Payoff to stockholders	0	0	0	10	0	5	+10	0	+5
Profit/loss to stockholders							+9	-1	+4

3. Cashing Out

Basic idea: **stockholders gain at the expense of bondholders when the firm pays out cash to stockholders**

Reason: **when firm pays out cash, the combined value of the firm's outstanding stock and bonds falls by the amount of cash paid out**

=> **as long as bonds drop in value, the drop in stock value < cash paid out**
=> **since stockholders get all of the cash paid out (dividends, stock repurchases), stockholders have a net gain**

Q: Why would bond prices tend to drop when the firm pays out cash to stockholders?

Ex. Assume a firm owes \$150 to bondholders and has \$10 of cash and assets that will pay \$120 or \$150 next year. The payout next year will thus equal \$130 or \$160.

Q: How does the payment of a \$10 dividend today affect the firm's stockholders?

4. Agency Costs, Covenants, and Debt

Debt covenant: agreement in debt contract that places restrictions on the firm

Role of debt covenants: **attempt to prevent actions that would benefit stockholders at the expense of bondholders**

Q: Why would stockholders want to protect bondholders against these problems?

Benefit of covenants: **increases issue price (lower interest rate) for debt compared to if bondholder interests are not protected**

Cost of covenants: **reduces management flexibility**

B. Stockholder-Manager Conflict and the Agency Benefit of Debt

Key idea: the interests of managers and owners may not be the same

1. Ownership and the Sharing of Benefits and Costs

a. Basic ideas

- 1) if the manager is also the owner, the goal of the manager and the goal of the owner is the same
=> same person!
- 2) if the manager doesn't own all of the firm's stock, there is a potential conflict between the owner and the manager if there is an unequal sharing of the costs and benefits
=> almost always the case

b. Types of conflict between owners and managers

Key => think about what is optimal for managers and stockholders

1) Management Effort:

- Q: Who bears the cost of management effort? **management**
- Q: Who gets the benefit of management effort? **management and owners**
- Q: Will managers want to expend more or less effort than is optimal for stockholders? **Less**

2) Pay and Perks:

- Q: Who bears the cost of management pay and perks? **stockholders**
- Q: Who gets the benefit of management pay and perks? **management and owners**
- Q: Will managers want more or less pay and perks than is optimal for stockholders? **More**

3) Firm diversification:

- Q: How does company-specific risk impact stockholders? **Doesn't since well diversified**
- Q: How does company-specific risk impact managers? **Makes worse off since not well diversified**
- Q: How does diversification of the firm impact stockholders and managers?

Stockholder: **indifferent**
Managers: **benefits them**

=> managers will want to diversify the firm even though it doesn't help stockholders

Note: **only a problem only if firm incurs cost as diversify**

4) Empire building:

Q: How does the size of the firm impact stockholders? **Doesn't (unless related to NPV)**

Q: How does the size of the firm impact managers? **may benefit**

=> management at larger firms tend to have higher pay, perks, power, and prestige and less risk

Q: Will managers want a larger firm than stockholders? **Yes, may even want to invest in negative NPV projects to grow firm**

Note: **the impact of stockholder-manager conflict likely worse if firm generates high free cash flow**

Free cash flow: **cash flow left after interest payments and investment in positive NPV projects**

2. Debt and owner-manager conflict

1) **Issuing debt allows original owners to avoid issuing equity**

Why important? **stock can only be issued to outside investors at a discount because of future owner/manager conflict**

2) **Debt helps resolve stockholder-manager conflict after it is issued**

=> issue debt and repurchase equity

a) **cash will be used for debt service so management can't waste it**

b) **creditors help monitor management**

c) **Threat of bankruptcy motivates managers to work harder**

Notes:

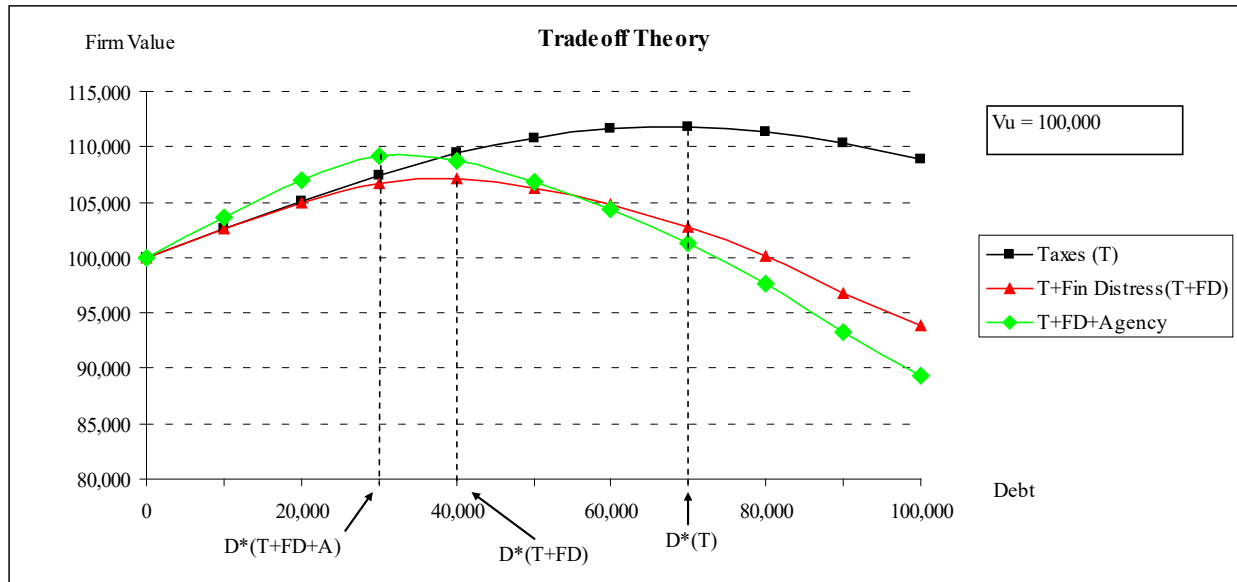
1) debt may weaken firm so less able to respond to competition

2) management may resist debt because don't like the discipline and reduced job security

IV. The Tradeoff Theory

$$V^L = V^U + PV(\text{Interest Tax Shield}) - PV(\text{Financial Distress Costs}) - PV(\text{Agency Costs of Debt}) + PV(\text{Agency Benefits of Debt}) \quad (16.3)$$

=> optimal debt maximizes firm value



V. Asymmetric Information and Capital Structure

Basic idea: management generally knows more about the firm than outside investors

A. Leverage as a Credible Signal

Basic idea: **an increase in debt signals management confidence in firm**

=> signal is credible since costly to send false signal

Q: Why is debt a credible signal?

=> **if additional debt drives firm into bankruptcy, management likely fired**

B. Adverse Selection

1. Key ideas:

- 1) sellers typically know more than buyers about the quality of an item.
- 2) at any given price, those who have low quality goods will be more eager to sell

2. Results:

- 1) products available for sale are likely below average quality
- 2) buyers will demand a discount when buying

Note: 1) and 2) feed off each other

3. Implications for Equity Issuance

- 1) **stock prices should fall (on average) when firms announce plans to issue equity**

=> an equity issue signals that management believes the stock price exceeds its value

Note: stock prices do indeed fall (on average) when firms announce plans to issue equity

- 2) **current stockholders will prefer that the firm fund investments with retained earnings or debt rather than equity**