Asymmetric Information and the Role of Financial intermediaries

1 Observations

1. Issuing debt and equity securities (direct finance) is not the primary source for external financing for businesses.

2. Financial intermediaries (indirect finance) are the most important source of external funds.

3. Only large, well-established corporations have easy access to securities markets to finance their activities.

4. The financial system is among the most heavily regulated sectors of the economy.

5. Collateral is a prevalent feature of debt contracts.

6. Debt contracts usually place substantial restrictive covenants on the borrowing firms.

2 Existence of Financial intermediaries (FI)

1. Economies of scale in monitoring borrowers: FI as a delegated monitor.

2. Asset Transformation (by transforming illiquid loans into liquid deposits)

3. Expertise in information production: Economies of scope by providing multiple financial services (banking, underwriting, and insurance) to their customers.

3 Asymmetric Information: Adverse Selection (The Lemons Problem)

Sellers have more information about the quality of the products than buyers do. But the information is private information to the sellers.

If quality cannot be assessed, the buyer is willing to pay at most a price that reflects the average quality. Then, sellers of good quality items will not want to sell at the price

for average quality. Thus, poor quality goods, whose value is below the averaged price, will drive out good quality goods (the bad drives the good out of the market). The buyer will be less willing to buy because all that is left in the market is poor quality items.

Suppose there are good borrowers and bad borrowers (borrowers with a higher risk of default).

Types of Borrowers	Rate of Returns	Prob. of Success
Good Borrowers	5%	0.5
	15%	0.5
Bad Borrowers	−30%	0.7
	50%	0.3

Note that the asymmetric information is because

(1) Bad borrowers are poor in quality *ex ante*, not because of actions taken by borrowers *ex post*.

(2) The type of borrowers is private information.

Note that the expected return of good borrowers is 10% and that of bad borrowers is -6%. Given *limited liability*, bad borrowers are willing to pay at most 15% of interest for loans (or on securities issued). If the market interest rate reflects the average interest rate, which is probably between 10% and 15%, the good borrowers will be driven out of the market.

3.0.1 Solutions

1. Private production and sale of information

    Free-rider problem

2. Government regulation to increase information disclosure

3. Financial intermediation

    (1) Banks *screen* borrowers to sort out good borrowers from bad borrowers

    (2) credit rationing: if it is still difficult to sort out good borrowers from bad ones, or if the cost of screening is too expensive, banks ration the amount of loans and/or the number of people get financed, *rather than raising the loan interest rate.*

Suppose at the current interest rate, there are a lot of borrowers try to apply for the loans (excess demand). Basic Economics tells us that raising interest rate will clear the market. But the bank realizes that raising interest rate will drive more good borrowers out of the market and those who are still willing to borrow at a higher interest rate are mostly bad

borrowers, and these bad borrowers are more likely to default. Thus, the expected return of the bank at a higher interest rate may be lower than that at a lower interest rate. Thus, rather than raising the loan interest rate, the bank maintains a lower interest rate, at which there is excess demand for loans, and limits the amount of loans each applicant can borrow.

4. Collateral and net worth

Default is the primary concern for lenders. Adverse selection causes a problem for the functioning of financial markets because when bad borrowers (borrowers with a higher risk of defaulting on their debts) get financed, they are more likely to default. Requiring collateral reduces the problem of adverse selection by limiting the loss of lenders in case of default. Net worth of borrowers (assets net of liabilities) serves as a similar role as collateral.

4 Asymmetric Information: Moral Hazard

Note that the asymmetric information is because

(1) The *ex post* actions taken by the borrowers, not due to their quality *ex ante*.

(2) The action taken by the borrowers is private information.

4.1 Moral Hazard in Equity Contracts: The Principal-Agent Problem

Due to separation of ownership and control of the firm, managers (agents) pursue personal benefits and power rather than the profitability of the shareholders (principles). This is also called the Principal-Agent Problem.

Suppose a manager (on behalf of shareholders) can choose a good or a bad investment project:

Types of Investment Projects	Prob. of Success	Private Benefit
Good	p_H	0
Bad	p_L	B

where $p_H > p_L$.

The private benefit accrued by the manager cannot be taken away by the lender or shareholders.

The choice of project is private information.

If the manager is paid a wage w, and

$$p_H w < p_L w + B,$$

then the manager will choose the bad project. This says that the wage w paid to the manager must be high enough to induce him to select the good project:

$$w \geq \frac{B}{p_H - p_L}.$$

Similarly, the managers (agents) have incentives to commit fraudulent conducts, such as hiding profits, diverting funds for their own benefits, or pursuing corporate strategies (e.g., acquisition) that enhance their personal power, rather than maximizing profits for shareholders (principles).

4.1.1 Solutions

1. Production of information: shareholders monitor by frequently auditing the firm.

    Free-rider problem

2. Government regulation

Enact laws to set up standard accounting principals deter criminal attempts. Enforce punishment on fraudulent conducts.

3. Financial Intermediation

    Venture capitalists

4. Debt Contracts: lenders hold bonds rather than equities. Thus, the firm pays a fixed amount of interest (coupon payments) no matter what the firm's profit is.

(1) No need to monitor the borrowers all the time.

(2) Raise the incentive of the entrepreneur to work hard.

4.2 Moral Hazard in Debt Markets

Borrowers issuing debts have incentives to take on projects that are riskier than the lenders would like (The moral hazard problem in equity contracts is that managers have incentive

to be lazy, while in debt contract they tend to be too heady).

4.2.1 Solutions

1. Net worth and collateral

If the lender requires the borrower to pledge collateral, or if the borrower has a higher net worth, the borrower has more at stake in the investment. The borrower's incentive to commit moral hazard will be reduced (*incentive compatible*).

2. Monitoring and Enforcement of Restrictive Covenants

But by whom?

3. Financial Intermediation

Banks monitor firms intensively and enforce restrictive covenants.