

Chapter 5 – Economics of Information Problems in EFM's

Financial Facts

1. A very small portion of external finance by most firms in EFM's is raised through the stock, bond or commercial paper market.
2. Most external finance by firms in EFM's is obtained from commercial banks.
3. Consumer finance is almost non-existent in EFM's.

We will explain the above phenomena as resulting from severe information problems between saver and borrower, and between owner and manager.

Quick Outline

- A. Definition of Asymmetric Information: One party (a seller or a borrower) has more information on the quality of the good they are selling or on their intentions with borrowed funds.
 1. Adverse Selection: The buyer of a good (or the seller of funds) attracts potential sellers (or borrowers) that offer low quality goods (have a high probability of default on the loan). The quality of the goods (probability of default) is not readily observable.
 2. Examples of Adverse Selection
 - a. Lemons Problem
 - b. Bank as a Lender
 - c. Banks as Borrowers
 - d. Common to the above examples is the inability to distinguish high quality goods, firms or banks from poor quality ones. This is the asymmetric information problem, since the sellers of the goods, the firms and the banks have more information on their quality. Unless this information problem is mitigated, a market will not exist.
 3. Solutions to the Adverse Selection Problem
 - a. screen potential sellers (borrowers) by gathering information on them
 - b. require collateral (or guarantees)
 4. Moral Hazard: Once the transaction between principal and agent (or lender and borrower) has been completed, the agent (borrower) may have incentive to engage in behavior that is to the detriment of the principal (lender). This behavior may not maximize benefits of the principal (increase the probability of default of the borrower).
 5. Examples of Moral Hazard
 - a. Principal/Agent Problem
 - b. Banks as Lenders: borrower has moral hazard incentive that puts the bank in danger
 - c. Banks as Borrowers: bank has moral hazard incentive that puts the depositor in danger
 6. Solutions to the Moral Hazard Problem
 - a. monitoring
 - b. collateral
 - c. restrictive covenants

Details

- A. **Information Production** (Which is behind all of the above). Although many reasons are given for the existence and operation of financial intermediaries, producing information to mitigate the asymmetric information problem between lenders and borrowers is thought to be their major function.

Asymmetric Information and the Role of FIs

1. **Asymmetric Information** – Definition

Borrower has more knowledge on the profitability of potential investments than the Lender.

Borrower has more knowledge on their intentions on what they will do with the borrowed funds than does the lender.

- a. **Adverse Selection**

Before the LN: Bad-Risk Potential Borrowers (those that will most likely default on their loans) will be those that most actively seek LNs.

- b. **Moral Hazard**

After the LN: Borrower may engage in activities that will increase the probability of Default (i.e. they may engage in immoral behavior with the lenders money, which is a hazard to morality).

- B. **Examples of the above Asymmetric Information Problems/ General and Specific to EFMs.**

1. **Adverse Selection and The Lemons Problem** (e.g. of adverse selection problem and interference with efficient operation of markets)
 - a. Used car mkt., potential buyers may find it difficult to identify (assess the quality of) a good car from a “lemon” (i.e. asymmetric info. Prob).
 - b. The price that buyers pay should therefore represent the average quality of a used car.
 - c. But the owner of a used car likely knows if the car is of high, or average quality or whether it is a lemon (i.e. there is asymmetric information).
 - d. If the car is “peach” the owner knows that the average value undervalues his/her car. Thus, they may not want to sell it or may have to spend money showing potential buyers it is of higher quality (diagnostic tests e.g.). This would be more trouble for the owner and raise the price even more.
 - e. Thus, there may be more lemons than average or good cars on the market. Because the quality of cars on the market will be low, there may be few sales of cars. Thus the market does not work efficiently (i.e. the price does not adjust to bring buyers and sellers together leaving an excess demand for average or high quality cars.
 - f. Problem here is that you get the wrong people coming to you with a car and you have a difficult time screening them to see which will probably give you what you want (i.e. adverse selection facing you).

2. Adverse Selection problems (Lemons Problem) in the Stock Market
 - a. Assume there is an asymmetric information problem between potential buyers of stock and managers that make the decision to sell new shares of stock (i.e. the potential buyer cannot distinguish completely between good and not so good companies – cannot assess quality accurately).
 - b. Potential buyer will be willing to pay a price for a stock that reflects the average quality of the companies (i.e. on average you will pay a price that reflects the quality of the firm).
 - c. If the managers know that their firm is more valuable than what the average stock price reflects, they will not use new stock issues to raise funds for their firm (they can raise funds cheaper elsewhere). Thus, only the average and poor quality (lemon) firms will be willing to issue new stock.
 - d. Knowing that this problem exists (and that they will on average be selecting a below average firm), potential buyers will be hesitant to buy at the current price. Thus, the market will break down.
 - e. Therefore, the seller will go to a lender that is able to better assess the quality of their firm (e.g. bank or the bond market where they can have someone give them a bond rating).

In the absence of asymmetric information the above lemons problem goes away.

3. Solutions to Mitigate the Adverse Selection Problem
 - Production of information
 - Steps to making information production less important
 - a. Information production - by sellers may be biased
 - b. Information by a private firm - may not completely solve the problem, due to the “FREE RIDER” problem. I.e. the producer of information for sale may not be able to exclude other people from obtaining the information for free. Thus, they do not have many customers and it may not be worth it to produce this information and they will not have incentives to produce this information.
e.g.
 - (1) *Free Rider Example* - if a few people buy info. on stocks and start buying certain undervalued stocks (since their average price underestimates their true value), other people may find out through you, through friends, through your market purchases which stocks are good and which are not. Then those that paid for the information will not benefit from it. Therefore they will not buy the info. and producers will not produce it. Therefore Markets for Information may not Develop and the Adverse Selection Problem will Discourage the Development of Financial Markets.

- (2) *Mitigating the Free-Rider Problem: Rating Agencies and Reputational Incentive* - Often, companies like Moody's, and Std. And Poor's do analysis and rate companies for bond sales. They act independently, but charge the company for the analysis. Companies would be anxious to have such an analysis and rating if they are good. Then bond purchasers can distinguish good from not so good.
- (3) *Government Forces Information Production* - Could Markets Benefit from Government Intervention?
 - (a) SEC Disclosure Laws for Companies on the Stock Exchanges
 - (b) Bank Prudential Regulation: Disclosure Laws on Balance Sheets and Income Statements.

4. Adverse Selection and Banks

- a. BANKS as Lenders –
 - (1) Face adverse selection of potential borrowers
 - (2) Mitigating Factors
 - (a) Screening
 - (b) Require collateral
- a. BANKS as Borrowers – Depositors (those not covered by deposit insurance) have less information than the banks on the condition of the bank To mitigate their information problem,
 - (3) Mitigating Factors
 - (a) Screening - through information on balance sheets and income statements.
 - (b) Government Requires Information be publicized
 - (c) Require collateral - in the way of capital
 - (d) Regulation and Supervision by government

5. Moral Hazard – after the transaction, the borrower (or agent) does what the lender (principal) does not want them to do.

- a. Corporate Governance in Firms: Principal-Agent Problem – e.g. of Owners vs. Managers.

Owners have their wealth at stake and want the firm managed to maximize that wealth over some period of time.

Managers have little (if any) wealth at stake and are interested in managing the firm to maximize their benefits.

These two goals may not be the same – e.g. managers may allocate perks to themselves, increase control of the company to exert power to accomplish future positions or move up to another firm or manipulate stock to profit themselves. This is why firms often give managers incentives that are tied to the profits of the firm.

- b. Principal-agent problem would not arise if the stockholders had complete information about the managers' behavior.
- c. Solutions:
 - (1) Stockholders could monitor managers carefully
 - (2) Incentive compatible contracts (to align incentives of managers with those of the owners)
 - (3) Government regulations on accounting standards
 - (4) Laws against fraud and stealing.

6. Moral Hazard at Banks

- a. BANKS as Lenders – borrowers may do things that increase the probability of default. If bank had full information they could try to force borrower to behave properly. To mitigate the problem banks,
 - (1) Monitor customers
 - (a) Check out their business (physically)
 - (b) Require they open DD and monitor transactions
 - (2) Require collateral
 - (3) Put restrictive covenants in loan contracts
 - (a) Who the loans go to
 - (b) When the funds can be used
 - (c) For what purpose the funds can be used
 - (4) Govt. has laws requiring firms and banks to adhere to certain regulations to divulge information on a regular basis.
- b. BANKS as Borrowers – Depositors (those not covered by deposit insurance) have less information than the banks on the condition of the bank To mitigate their information problem,
 - (1) Depositors should monitor banks, but this depends on the transparency of banks. Banks listed on the Stock Exchange must disclose information on their balance sheet and income statements. It is difficult to obtain information on the quality of a bank's loan portfolio.
 - (2) Banks may hold a large amount of capital to reassure depositors that if there is a problem, there is sufficient wealth to pay off depositors (this is a type of Collateral)
 - (3) Government regulation on banks:
 - (a) Capital requirements
 - (b) Accounting requirements
 - (c) Exposure Limitations – Size and Sector
 - (4) Bank Examinations
 - (a) loan quality
 - (b) capital adequacy
 - (c) management procedures

- (5) Deposit Insurance – to guarantee deposits up to a certain point to protect unsophisticated depositors. This encourages deposits that may not occur due to the moral hazard problem.

C. The Government Safety Net – An Example of Moral Hazard

1. *Deposit Insurance – government coverage of depositors' accounts in the event of bank closure and insolvency.* Govt. officials try to close a bad bank before it is insolvent in order to liquidate the bank and pay of the depositors. If depositors are not paid off completely they are said to be taking a “haircut.”
2. *Purpose:*
 - a. To provide a stable source of funds to the banking system
 - b. To prevent panics, contagion (to healthy banks) and financial system instability. Give an example of contagion and panics.
 - c. Protect unsophisticated depositors who do not possess the resources to monitor banks.
3. *Types of coverage and the Incentives Established*
 - a. Full Coverage
 - (1) The fate of the bank is separated from depositors. Depositors do not have incentive to monitor
 - (2) Government must monitor banks and they may or may not do an adequate job. Their own wealth is not at stake.
 - (3) Moral Hazard problem may arise. Banks have incentive to take undue risks if strict monitoring does not take place.
 - (4) The result may be a risking banking system with high probability of default and misdirected funds. The deposit insurance fund and the government (ultimately the taxpayers) are at risk to loose a large amount of funds.
 - b. Partial Coverage
 - (1) The small and unsophisticated depositors are covered and thus they are encouraged to keep their funds in a bank.
 - (2) The large and sophisticated depositors are encouraged to monitor. This also requires transparency of the banking system (i.e. disclosure laws).
 - (3) Government still should monitor and regulate
 - (4)
 - c. Banks as Insurers
 - (1) Monitoring of banks by other banks
 - (2) This would require sharing information between banks
 - (3) If solvent banks had liquidity problems due to panics, other banks could supply this liquidity and solve a crisis.
 - d. Other Problems Associated with the Safety Net
 - (1) Large institutions may have a “too Big to Fail” implicit guarantee. Government may provide this implicit insurance due to the adverse impact

that a large failed bank would have on the financial system and the economy. This implicit guarantee may produce a moral hazard problem if depositors have no incentive to monitor.

- (2) Government monitoring is moving away from detailed examination and more toward self-regulation (e.g. through examining procedures for risk management and capital regulations). While this is maybe more manageable for the government it could also leave a gap in monitoring. It might be best if depositors picked up some of the responsibility.
- (3) Lender of last resort: If a bank is solvent, but illiquid, the Fed has a policy of making loans to banks to help them through the liquidity crises.