

Information problems

Textbook questions

Ch. 11: 1-20

Review Questions

1. Financial intermediaries can take advantages of economies of scale when making loans. That is, an individual would have to expend considerable costs of gathering information, writing legal documents, etc. to make one loan. An intermediary makes many loans so can spread these fixed costs over more loans.
2. Symmetric information is known to both borrowers and lenders; asymmetric information occurs when borrowers have private information--something the borrowers know that the lenders do not know. Information asymmetry makes channeling funds efficiently from lenders to borrowers more difficult.
3. Moral hazard occurs when borrowers make different use of borrowed funds than they would have made with their own; adverse selection occurs when bad risks are more likely to accept a financial contract than are good risks. Each makes information asymmetric: The lender may not know what the borrower will do with the funds because of moral hazard, and the lender may not know the riskiness of the borrower because of adverse selection.
4. Those who do not buy the information can profit from it by mirroring the trades of those who have purchased the information problem. Intermediaries hold the loans they make, eliminating the possibility of free riding.
5. The "lemons" problem initially referred to the used car market. When used car buyers cannot tell good used cars from bad ("lemons"), good used cars will not be for sale. If the price of used cars are set at "average" cars, good car owners will not sell, since the price is below value, but lemon owners will want to sell. In financial markets, when lenders cannot tell good (low risk) opportunities from high risk opportunities, an "average" market price (or interest rate) will drive out the good borrowers and leave the risky borrowers. Financial intermediaries are better at differentiating low risk from high risk borrowers, so in cases of significant asymmetric information, most lending is handled by intermediaries.
6. The answer is adverse selection: good borrowers' projects will not be viable at the higher interest rate, so the bank has a higher percentage of bad borrowers. Alternatively, the bank could use credit rationing and not raise interest rates to match the quantity of loans demanded and supplied.
7. Such provisions are restrictive covenants; banks use them in order to reduce moral hazard problems.
8. This is the principal-agent problem: Managers maximize their own benefits and achieve personal goals and do not maximize the firm's value. Remedies include giving managers a larger equity stake, limiting the firm's free cash flow, monitoring the firm closely, or threatening a takeover.
9. A large firm with many shares is more likely to suffer principal-agent problems because organizing challenges to management is more costly.
10. To reduce adverse selection, banks can ration credit. To reduce moral hazard, banks custom-tailor loans with covenants, lenders require high internal net worth, and shareholders insist that free cash flow go into dividends and that inefficient firms be restructured. To reduce both moral hazard and adverse selection, banks specialize in gathering information and serve as delegated monitors and venture capitalists take equity stake and positions on boards of directors.

Analytical Problems

11. The problem is adverse selection. It is likely that only a lemon would be sold so fast. A buyer could circumvent the problem by having a mechanic inspect the car or by getting a guarantee from the dealer (or trust the dealer's reputation).

12. The problems are moral hazard (once insured, you won't work as hard) and adverse selection (people who are more likely to be fired or get low raises would be more likely to buy such insurance).

13. Moral hazard is less likely to be a problem in (b). Note that you can use this question to explain why large companies often provide stock options as part of executives' compensation packages.

14. Be sure that the owner's own funds are at risk by making her take out a mortgage loan and pledging stocks and bonds as collateral. You might like to get her to pledge her first-born child as well (great collateral value), but that's not legally enforceable.

15. Asymmetric information owing to moral hazard and adverse selection makes information costs for external funds higher than for internal funds. No; it depends upon the extent to which problems are solved by debt finance, takeover or threat of takeover, high internal net worth, or greater shareholder control.

16. Yes; insiders may buy good firms first, leaving lemons to the general public.

17. You would not be happy in the first case because higher default risk reduces bond prices. In the second case, you would be happy because lower default risk raises the bond's price.

18. Morgan's actions may have reduced the moral hazard problem of firm managers' incentives, but J.P. would have had to monitor his representatives actions to make sure they were in lines with his demands.

19. No; business cycles are less pronounced in Japan than in the United States, so the chance of default is less. This allows Japanese firms to sell more debt.

Data question

20. Adverse selection means that high-risk firms sell more shares than low risk firms. This is because investors cannot tell all high-risk companies from low-risk companies, so price both companies the same, at the "average" price. If a company announces it is selling more shares, investors get a signal that it is a higher risk firm (as higher risk firms sell more shares), so the price of outstanding shares should fall.

Additional questions

1. A moral hazard problem exists in financial markets when the borrower of funds has an incentive to use the funds in a way different from what the lender intends (to the detriment of the lender). In some Asian countries, banks succumbed to a moral hazard problem when they used depositors funds for risky loans. What drove the moral hazard was an implicit government guarantee of the loans; if depositors (and banks, for that matter) considered the otherwise risky loans guaranteed, they were less apt to monitor the banks and loans. In fact, since implicit government guarantees eliminated the risk of the loans, there was an incentive to make them. As a further incentive to make the risky loans, banks apparently could not refuse loans to politically well-connected businesses.

2.

1.

Table 1

Project	Total return in state 1	Total return in state 2	Expected total return
baseball team	\$80	\$120	100
brewery	\$110	\$110	\$110

2.

Table 2

Project	Net return in state 1	Net return in state 2	Expected net return
baseball team	\$-20	\$20	\$0
brewery	\$10	\$10	\$10

Questions

- a. Brewery
- b. Brewery
- c. Brewery

3.

Table 3

Project	Total return in state 1	Total return in state 2	Expected net return
baseball team	$\$80 - \$80 = \$0$	$\$120 - \$110 = \$10$	\$5
brewery	$\$110 - \$110 = \$0$	$\$110 - \$110 = \$0$	\$0

Questions

- a. Ball team
- b. Ball team

4.

Table 4

Project	net return in state 1	net return in state 2	Expected net return	Percent net return
baseball team	$\$80 - \$100 = \$-20$	$\$110 - \$100 = \$10$	-\$5	-5%
brewery	$\$110 - \$100 = \$10$	$\$110 - \$100 = \$10$	\$10	10%

Questions

- a. Brewery – highest expected return, lowest risk
- b. No – you face a moral hazard problem
- c. Monitor you carefully, require you to put up collateral, or put a restrictive covenant in the contract forcing you to buy the brewery. In this case, the bank trades transaction costs for information.
- d. No.

5. Yes. Its expected return is $(1/2)(-5\%) + (1/2)(10\%) = 2.5\%$

6. No. Now the brewery is a sure loser (-5%) to the buyer. The expected return on the baseball team is now $(1/2)(0) + (1/2)(120-115) = 2.5\%$. Only the baseball teams will ask for loans, resulting in an expected return of $(1/2)(-20) + (1/2)(15) = -2.5\%$ for the bank. The bank will not fund any loans. It would be better for the bank to “credit ration” at the 10% interest rate – offer fewer loans at the 10% rate rather than increasing the interest rate to 15%.

Types of financial institutionsTextbook questions

Ch. 12: 1-23

Review Questions

1. The five main groups of financial institutions are securities market institutions (investment banks, brokers and dealers, and organized exchanges); investment institutions (mutual funds and finance companies); contractual savings institutions (insurance companies and pension funds); government financial institutions; and depository institutions (commercial banks, savings institutions, and credit unions).
2. Underwriters provide valuable information to both sides of the market.
3. No; the NYSE is a secondary market. You are buying the shares of stock from someone else, not from IBM.
4. In the first case, the firm is acting as a dealer; in the second case, it is acting as a broker
5. E-trading usually refers to trading conducted on the Internet. When investors are able to trade over computer networks (instead of on exchanges), the value of exchange seats should fall – and since the Internet also allows trading outside of exchanges, the value of seats has fallen.
6. Finance companies' business includes consumer finance (loans to high-risk borrowers who cannot always borrow from banks), business finance (loans to small firms or firms who need to lease large capital items), and sales finance (loans to people who buy consumer or business goods on credit).

7. Insured individuals take on greater risk than those without insurance – this is a moral hazard problem. Insurance companies use deductibles, co-insurance, restrictive covenants, limits on the value of claims paid, retaining the right to cancel policies, and the use of claims adjusters to investigate claims.
8. Actuaries use the law of large numbers to calculate the probabilities of different insurable events. Insurers face adverse selection because the people most likely to have an insurable event are most likely to want insurance, and they face moral hazard because people's behavior may change after they are insured.
9. Predicting property and casualty losses is more difficult than predicting deaths.
10. Advantages include more efficient management of the portfolio, cheaper benefits such as annuities, and special tax treatment.
11. Banks address adverse selection problems by specializing in gathering information about the credit risk of borrowers and by custom-tailoring loans (by, perhaps, including collateral requirements and covenants).
12. Credit unions and savings institutions specialize in providing loans to consumers and homeowners, respectively. In credit unions, depositors and borrowers have a common interest, usually that of working for the same employer, which helps reduce asymmetric information problems. Savings institutions such as S&Ls focus their portfolios on long-term mortgages and thus are much more subject to interest-rate risk than are commercial banks.
13. Mutual funds pool resources in order to invest in a diversified portfolio (allowing risk sharing), they also lower transactions costs of investing – increasing liquidity. Mutual funds do not make commercial loans; they pass funds through to existing direct instruments. There is less need for regulation because they just pass funds through, so long as information is made available to investors.
14. Sales finance companies provide credit to customers. GMAC might do so for marketing reasons (to increase the sales of GM cars).

Analytical Problems

15. These institutions pool risk of death and investment risk that individuals may not be able to do for themselves. Self-insurance would be more costly for individuals.
16. One would expect insurance companies to raise premiums (for everyone, since they can't take into account neighborhood characteristics). A rise in premiums might result in adverse selection problems in that low-risk firms may choose not to buy insurance, leaving the company with only high risk clients. If severe enough, the adverse selection problem might result in the insurance company withdrawing from the state.
17. Such a country is more likely to develop significant markets in mutual funds. The funds would help savers more than borrowers because mutual funds just buy well-known assets, they do not make commercial loans.
18. It is not; participation is compulsory, you get all risks, not just selective ones, thus avoiding adverse selection problems.
19. An index fund. In an efficient market, it is impossible to systematically “beat the market” by picking individual stocks and constantly adjusting portfolios. Such active management will result in higher costs without higher gains.
20. (a) Mutual fund; (b) banking institution; (c) commercial bank; (d) insurance company; (e) investment bank; (f) stockbroker; (g) sales finance company; (h) savings institution; (i) Rocco the loan shark.
21. Yes; past performance is not necessarily a guide to future returns; risk levels, transactions costs, sales loads, liquidity, and taxability may be different.

22. In a defined benefit plan, your retirement payout is predetermined so that you bear no risk. However, the implicit return to the plan may be fairly low if plan managers do not invest well, and you could lose your pension benefits if the plan is underfunded. In a defined contribution plan, your retirement payout depends on what your funds earn, so it is riskier than a defined benefit plan. However, the return may be higher, and you may have some control over how the money is invested. I wouldn't ask a question like this on an exam, but it is useful information to know.

23. If whole life insurance earnings were taxed, the demand would fall. There would be an increase in demand for term life, and possibly other types of assets like pension plans (to substitute for the "cashability").

Additional questions

- (a) An investment institution; in particular, a finance company
- (b) The Money Store sells many of the loans it issues – it turns the loans into marketable securities.
- (c) Information gathering. The Money Store is very good at assessing credit risk, and giving loans only to low-risk businesses.
- (d) In order for other firms to buy Money Store loans, the Money Store has to maintain a reputation for being a superior information gatherer (and information processor). If the Money Store begins accepting bad loans, it will lose its reputation, and ability to sell loans.
- (e) One of the purposes of the SBA is to guarantee parts (80%) of loans to small businesses. This allows small businesses to gain loans at lower interest rates, and thus encourages the formation of small businesses in the economy.

Textbook questions

Ch. 13: 1-26

Review Questions

1. Banks obtain funds from sources into order to use them in making loans. When a bank obtains funds, it does so by issuing a liability – often a deposit account. It uses the funds to make loans, which are assets to the bank.
2. Banks provide risk-sharing, liquidity, and information services to savers and borrowers.
3. Aside from greater liquidity and offering a medium of exchange, bank deposits are insured, making them less risky.
4. Borrowings are funds borrowed by banks. Funds are usually borrowed from otherbanks (the federal funds market) or from the Federal Reserve (a discount window loan). Banks engage in borrowing when they have greater opportunity to make loans than they have deposits, or when they have had unexpected withdrawals from deposit accounts and need to borrow to meet the required reserve ratio.
5. Banks borrow (unsecured) from each other at federal funds rate; repos are secured by underlying securities.
6. In that case, if a bank fails, only its shareholders lose, not depositors or the government insurance fund (taxpayers).
7. The three types of risk faced by banks are credit risk (the risk of default); liquidity risk (the risk of running out of cash when needed); and interest rate risk (the risk that changes in interest rates affect the value of the bank's portfolio).
8. Banks reduce credit-risk exposure by developing long-term relationships with customers, gathering information on their prospects and general business conditions, and monitoring borrowers' behavior with the loan proceeds.

9. The interest rate charged depends on the default risk of the loans, the opportunity cost of funds, and the cost of funds.
10. To provide for future defaults, banks create loan-loss reserves; when borrowers default, banks write off the loans.
11. Banks manage assets and liabilities to reduce liquidity risk. To meet these goals they mix lending through the Federal funds market and repurchase agreements (RPs), and keep enough cash to meet needs without sacrificing too much return by using CDs, RPs, Eurodollars, and federal funds.
12. In a floating-rate loan, the loan interest rate changes with market interest rates. Interest rate risk is reduced for the bank, as the bank's interest income rises with its cost of funds.
13. Off-balance-sheet banking activities include trading in derivative assets, selling liquidity and information services, and securitizing loans. Banks have participated in these activities to capitalize on the transactions-cost and information-cost advantages to augment income.

Analytical Problems

14. Moral hazard from borrowers – the companies banks lend to – would decrease, as banks would be able to monitor more closely and have some control over decisions. However, banks would have a moral hazard problem in engaging in risky behavior – buying equity shares (which are more risky than loans or bonds) with deposits that are insured. The moral hazard problem exists in this case because depositors have little incentive to monitor banks' actions, because their deposits are insured. This is the main reason banks are not allowed to hold equity shares.
15. Yes; there would still need to be transactions services and a payments system, even if there were no need for commercial lending by banks.
16. People need liquidity, which is low in undeveloped financial markets; moreover, there is less information and greater risk in undeveloped financial markets, so people put greater wealth in financial institutions.
17. If depositors had full information on borrowers, a bank run could not be started by the unfounded fear that bad loans had been made; this result would be possible if bankers had private information. However, a run could start for other reasons, such as bad economic times.
18. Increased volatility raises the riskiness of the bank portfolio, so banks are more likely to fail, and the value of their equity capital declines.
19. Banks welcome it because the action reduces the implicit tax on reserves (because reserves pay no interest); banks can then lend the freed reserves at a positive interest rate. In the second case, no, since they would not reduce their level of reserves.
20. Bank A reduces securities by \$10 million, and increases reserves by \$10 million. Bank B increases securities by \$10 million, and reduces reserves by \$10 million.
21. First--assets: -\$1000 in reserves; liabilities: -\$1000 in checkable deposits. Second--assets: +\$1000 in reserves; liabilities: +\$1000 in checkable deposits.
22. \$0.6 million for First, \$0.3 million for Second; -\$0.3 million (reserve deficiency) for First, \$1.2 million for Second.
23. No; with such a large proportion of assets in the form of loans--and no securities--it has no defense against a liquidity crisis; also, with no equity cushion, a small bad event could cause the bank to fail.
24. The increase in interest rates led to large capital losses on account of a huge duration gap.

25. \$5 million excess reserves; reserves \$10 million, securities \$40 million, loans \$140 million, deposits \$140 million, capital \$50 million; -\$4 million excess reserves, so borrow \$4 million; same as before but reserves \$14 million, borrowings from banks \$2 million, borrowings from Fed \$2 million.

26. You would try to get a negative duration gap (longer term liabilities than assets) in order to profit from the rise in rates. You would make shorter-term loans and issue more long-term CDs.

Additional questions

1(a) You can buy a swap that contracts you to pay a fixed (interest) amount over time in exchange for earning a variable (interest) amount that depends on market interest rates. When interest rates do go up, you will benefit by receiving more interest than you pay. Or, you could buy a Treasury future (or forward or option) that contracts you to sell ("put") a T-security in one week at today's price. When interest rates rise, you can buy the T-security from the market at the new lower price, and sell it at the fixed price. You can also buy an option to sell that will accomplish the same thing. (Note: after interest rates rise, you can sell the future itself for a higher price.)

(b) I will copy your moves, and thus eat in to your profits. As soon as you start to buy a swap, I will buy the swap (and the futures and options) as well. This increased demand will drive up its price, before you can buy the large number of swaps you wanted to buy.

2. (a) A = Assets, L = liabilities

A (A) \$2.5 million in mortgage loans

A (B) \$500,000 of property (buildings, computers, desks, land, etc.) owned by the bank

A (C) \$3 million in commercial real estate loans

L (D) \$2 million in checking account deposits (insured by the federal government)

L (E) \$3.5 million in savings deposits (insured by the federal government)

A (F) \$50,000 in currency in bank vaults

A (G) \$450,000 in reserve balances with the Fed

(b) (In millions of \$) $NW = A - L = 2.5 + 0.5 + 3 + 0.05 + .45 - 2 - 3.5 = 1.0$

(c) If interest rates rise, the interest costs will rise, as you must pay your depositors more. At the same time, your revenues, gotten from your real estate and mortgage loans, have not risen. When costs rise and revenues do not, profits fall. This is trouble!

(d) Better. The fixed rate CDs would lock in interest rate costs, so if interest rates rise, costs won't as much. At the same time, offering variable interest rate mortgages will allow your revenues to rise when your costs rise.

(e) You can set a futures contract to sell a Treasury security at today's price. If interest rates do rise, you will be able to buy the T-security from the market at the new lower price, and make a profit by selling the T-security at the pre-arranged higher price. You can use this profit to cover your costs. Similarly, you can use options on futures contracts to do the same thing with lower risk. You can also set up an option to sell over a period of several months to give you flexibility. Finally, you can engage in an interest rate swap, trading the fixed returns of your loans for the variable returns enjoyed of an insurance company or pension fund. This way the variability in your revenue matches the variability of your costs.

(f) You will make the oil company loan, even though its expected return is negative.

$(0.95 \cdot (-\$250,000) + 0.05 \cdot (\$2,500,000)) = -\$112,500$. This is because buying the oil company stock gives you a 5% chance to save the bank, and thus your job; while purchasing the Treasury security will not give you any chance to save your job or the bank. The moral hazard problem is this: if the bank is taken over by regulators, the government will have to cover some deposits with the insurance pool. Your loan to the oil company lowers the expected net worth of the bank, thus increasing the expected insurance payments. The government would thus clearly prefer you to buy the Treasury security, while you would prefer to make the oil loan. The depositors don't care too much, as long as they aren't inconvenienced by the federal takeover. In the 1980s, many banks did indeed engage in risky investments when they risked a takeover. Federal regulators made the situation worse by not closing banks quickly.

International issues

Textbook questions

Ch. 16: 6-13, 16-20

Review Questions

6. The leading risk managed by international banks is exchange rate risk. Techniques to manage this risk include the use of financial futures, options, and currency swaps.
7. A currency swap is the exchange of debt instruments denominated in different currencies. Using currency swaps allows firms to borrow in their own countries so that borrowing costs are lower (because information about the company is more available) and then swap the payments to obtain foreign currency.
8. Foreign-exchange grew because of increased world trade and the growth in cross-border financial transactions.
9. There is an information problem because trading partners are in a foreign country, so there is limited information about their creditworthiness. Banks and the customers use the bankers' acceptance, in which a bank guarantees repayment by the borrowing firm, earning a fee for its investment in information collecting and monitoring.
10. Euromarkets are offshore banking centers that deal extensively in foreign exchange. They emerged in reaction to U.S. regulation and the demand for dollars overseas. Until the early 1970s, the leading customers were governments and state-owned enterprises. By the late 1970s, the leading customers were oil-producing countries. By the late 1980s, the leading customers were countries with large trade surpluses. The principal Eurocurrencies are the U.S. dollar, German mark, and Japanese yen.
11. Loan syndication is when several banks together make a loan. That is, the loan is shared among banks. Usually, large loans are syndicated to allow individual banks to diversify portfolios. In the U.S., large loans and the underwriting of large IPOs are often syndicated.
12. When Regulation Q ceilings were effective, disintermediation reduced banks' sources of funds, so U.S. banks turned to Euromarkets for funds.
13. The problem of interest rate risk is reflected in a mismatch of the duration of assets and liabilities. The problem of exchange rate risk is reflected in the mismatch in the value of currencies of assets and liabilities. Possible risk management strategies include hedging with futures or options or using currency swaps.

Analytical Problems

16. You could enter a contract to sell 1 billion yen when the loan is due; such a transaction effectively locks in a known exchange rate.
17. No; bankers' acceptances are negotiable and often sold in the market, just like any other financial asset.
18. Depositors considered foreign-owned banks less likely to fail, and so accepted lower deposit rates in exchange for the lower risk.
19. Ichi-ball's bank writes a letter of credit and sends it to Big Ball to pay for the balls. When Big Ball ships the baseballs from the United States to Japan, it presents the letter of credit to its own bank in the United States, which pays it in dollars. Big Ball's bank issues a time draft and sends it to Ichi-ball's bank. Ichi-ball's bank pays Big Ball's bank. All that remains is for Ichi-ball to pay off its bank at some point in the future; in the meantime, the "bankers' acceptance," which is a liability of Ichi-ball's bank, exists and can be traded in the market.
20. False; credit risk is probably more important in international lending, with its additional cross-country information and enforcement requirements.