

## Chapter 2

### ANSWERS TO QUESTIONS

1. *If I can buy a car today for \$5,000 and it is worth \$10,000 in extra income to me next year because it enables me to get a job as a traveling salesman, should I take out a loan from Larry the Loan Shark at a 90% interest rate if no one else will give me a loan? Will I be better or worse off as a result of taking out this loan? Can you make a case for legalizing loan sharking?*

Yes, I should take out the loan, because I will be better off as a result of doing so. My interest payment will be \$4,500 (90% of \$5,000), but as a result, I will earn an additional \$10,000, so I will be ahead of the game by \$5,500. Since Larry's loan-sharking business can make some people better off, as in this example, loan sharking may have social benefits. (One argument against legalizing loan sharking, however, is that it is frequently a violent activity.)

2. *Some economists suspect that one of the reasons economies in developing countries grow so slowly is that they do not have well-developed financial markets. Does this argument make sense?*

Yes, because the absence of financial markets means that funds cannot be channeled to people who have the most productive use for them. Entrepreneurs then cannot acquire funds to set up businesses that would help the economy grow rapidly.

3. *Why is a share of Microsoft common stock an asset for its owner and a liability for Microsoft?*

The share of Microsoft stock is an asset for its owner, because it entitles the owner to a share of the earnings and assets of Microsoft. The share is a liability for Microsoft, because it is a claim on its earnings and assets by the owner of the share.

4. *If you suspect that a company will go bankrupt next year, which would you rather hold, bonds issued by the company or equities issued by the company? Why?*

You would rather hold bonds, because bondholders are paid off before equity holders, who are the residual claimants.

5. *"Because corporations do not actually raise any funds in secondary markets, secondary markets are less important to the economy than primary markets are." Is this statement true, false, or uncertain?*

This statement is false. Prices in secondary markets determine the prices that firms issuing securities receive in primary markets. In addition, secondary markets make securities more liquid and thus easier to sell in the primary markets. Therefore, secondary markets are, if anything, more important than primary markets.

6. *Describe who issues each of the following money market instruments:*

- a. *Treasury bills*
- b. *Certificates of deposit*
- c. *Commercial paper*
- d. *Repurchase agreement*
- e. *Fed funds*

Treasury bills are short-term debt instruments issued by the United States government to cover immediate spending obligations, i.e. finance deficit spending. Certificates of deposit (CDs) are issued by banks and sold to depositors. Corporations and large banks issue commercial paper as a method of short-term funding in debt markets. Repos are issued primarily by banks, and funded by corporations and other banks through loans in which treasury bills serve as collateral, with an explicit agreement to pay off the debt (repurchase the treasuries) in the near future. Fed funds are overnight loans from one bank to another.

7. *What is the difference between a mortgage and a mortgage-backed security?*

Mortgages are loans to households or firms to purchase housing, land, or other real structures, where the structure or land itself serves as collateral for the loans. Mortgage-backed securities are bond-like debt instruments that are backed by a bundle of individual mortgages, whose interest and principal payments are collectively paid to the holders of the security. In other words, when an individual takes out a mortgage, that loan is bundled with other individual mortgages to create a composite debt instrument, which is then sold to investors.

8. *The U.S. economy borrowed heavily from the British in the nineteenth century to build a railroad system. Why did this make both countries better off?*

The British gained because they were able to earn higher interest rates as a result of lending to Americans, while the Americans gained because they now had access to capital to start up profitable businesses such as railroads.

9. *A significant number of European banks held large amounts of assets as mortgage-backed securities derived from the U.S. housing market, which crashed after 2006. How does this demonstrate both a benefit and a cost to the internationalization of financial markets?*

The international trade of mortgage-backed securities is generally beneficial in that the European banks that held the mortgages could earn a return on those holdings, while providing needed capital to U.S. financial markets to support borrowing for new home construction and other productive uses. In this sense, both European banks and U.S. borrowers should have benefitted. However, with the sharp decline in the U.S. housing market, default rates on mortgages rose sharply, and the value of the mortgage-backed securities held by European banks fell sharply. Even though the financial crisis began primarily in the United States as a housing downturn, it significantly affected European markets; Europe would have been much less affected without such internationalization of financial markets.

*10. How does risk sharing benefit both financial intermediaries and private investors?*

Financial intermediaries benefit by carrying risk at relatively low transaction costs. Since higher risk assets on average earn a higher return, financial intermediaries can earn a profit on a diversified portfolio of risky assets. Individual investors benefit by earning returns on a pooled collection of assets issued by financial intermediaries at lower risk. The financial intermediary lowers risk to individual investors through the pooling of assets.

*11. How can the adverse selection problem explain why you are more likely to make a loan to a family member than to a stranger?*

Because you know your family member better than a stranger, you know more about the borrower's honesty, propensity for risk taking, and other traits. There is less asymmetric information than with a stranger and less likelihood of an adverse selection problem, with the result that you are more likely to lend to the family member.

*12. One of the factors contributing to the financial crisis of 2007–2009 was the widespread issuance of subprime mortgages. How does this demonstrate adverse selection?*

The issuance of subprime mortgages represents lenders loaning money to the pool of potential homeowners who are the highest credit risk and have the lowest net wealth and other financial resources. In other words, this group of borrowers most in need of mortgage credit was also the highest risk to lenders, a perfect example of adverse selection.

*13. Why do loan sharks worry less about moral hazard in connection with their borrowers than some other lenders do?*

Loan sharks can threaten their borrowers with bodily harm if borrowers take actions that might jeopardize their paying off the loan. Hence borrowers from a loan shark are less likely to increase moral hazard.

14. *If you are an employer, what kinds of moral hazard problems might you worry about with regard to your employees?*

They might not work hard enough while you are not looking or may steal or commit fraud

15. *If there were no asymmetry in the information that a borrower and a lender had, could a moral hazard problem still exist?*

Yes, because even if you know that a borrower is taking actions that might jeopardize paying off the loan, you must still stop the borrower from doing so. Because that may be costly, you may not spend the time and effort to reduce moral hazard, and so the problem of moral hazard still exists.

16. *“In a world without information costs and transaction costs, financial intermediaries would not exist.” Is this statement true, false, or uncertain? Explain your answer.*

True. If there are no informational or transactions costs, people could make loans to each other at no cost and would thus have no need for financial intermediaries.

17. *Why might you be willing to make a loan to your neighbor by putting funds in a savings account earning a 5% interest rate at the bank and having the bank lend her the funds at a 10% interest rate, rather than lend her the funds yourself?*

Because the costs of making the loan to your neighbor are high (legal fees, fees for a credit check, and so on), you will probably not be able to earn 5% on the loan after your expenses even though it has a 10% interest rate. You are better off depositing your savings with a financial intermediary and earning 5% interest. In addition, you are likely to bear less risk by depositing your savings at the bank rather than lending them to your neighbor.

18. *How do conflicts of interest make the asymmetric information problem worse?*

Potentially competing interests may lead an individual or firm to conceal information or disseminate misleading information. A substantial reduction in the quality of information in financial markets increases asymmetric information problems and prevents financial markets from channeling funds into the most productive investment opportunities. Consequently, the financial markets and the economy become less efficient. That is, false information as a result of a conflict of interest can lead to a more inefficient allocation of capital than just asymmetric information alone.

19. *How can the provision of several types of financial services by one firm be both beneficial and problematic?*

Financial firms that provide multiple types of financial services can be more efficient through economies of scope, that is, by lowering the cost of information production. However, this can be problematic since it can also lead to conflicts of interest, in which the financial firm provides false or misleading information to protect its own interests. This can lead to a worsening of the asymmetric information problem, making financial markets less efficient.

20. *If you were going to get a loan to purchase a new car, which financial intermediary would you use: a credit union, a pension fund, or an investment bank?*

You would likely use a credit union if you were a member, since their primary business is consumer loans. In some cases it is possible to borrow directly from pension funds, but it can come with high borrowing costs and tax implications. Investment banks do not provide loans to the general public.

21. *Why would a life insurance company be concerned about the financial stability of major corporations or the health of the housing market?*

Most life insurance companies hold large amounts of corporate bonds and mortgage assets, thus poor corporate profits or a downturn in the housing market can significantly adversely impact the value of asset holdings of insurance companies.

22. *In 2008, as a financial crisis began to unfold in the United States, the FDIC raised the limit on insured losses to bank depositors from \$100,000 per account to \$250,000 per account. How would this help stabilize the financial system?*

During the financial panic, regulators were concerned that depositors worried their banks would fail, and that depositors (especially with accounts over \$100,000) would pull money from banks, leaving cash-starved banks with even less cash to satisfy customer demands and day-to-day operations. This could create a contagious bank panic in which otherwise healthy banks would fail. Raising the insurance limit would reassure depositors that their money was safe in banks and prevent a bank panic, helping to stabilize the financial system.

## **ANSWERS TO APPLIED PROBLEMS**

23. *Suppose you have just inherited \$10,000 and are considering the following options for investing the money to maximize your return:*

- **Option 1:** *Put the money in an interest-bearing checking account that earns 2%. The FDIC insures the account against bank failure.*
- **Option 2:** *Invest the money in a corporate bond with a stated return of 5%, although there is a 10% chance the company could go bankrupt.*

- **Option 3:** *Loan the money to one of your friend's roommates, Mike, at an agreed-upon interest rate of 8%, even though you believe there is a 7% chance that Mike will leave town without repaying you.*
- **Option 4:** *Hold the money in cash and earn zero return.*

24. *If you are risk-neutral (that is, neither seek out nor shy away from risk), which of the four options should you choose to maximize your expected return? (Hint: To calculate the expected return of an outcome, multiply the probability that an event will occur by the outcome of that event.)*

With Option 1, since deposits are insured it can be assumed a riskless investment. Thus, the expected total payoff would be  $\$10,000 \times 1.02 = \$10,200$ . With Option 2, a bond return of 5% implies a potential payoff of  $\$10,000 \times 1.05 = \$10,500$ , and there is a 90% chance that this outcome will occur, thus the expected payoff is  $\$10,500 \times 0.9 = \$9,450$ . Under Option 3, the expected payoff is  $\$10,000 \times 1.08 \times 0.93 = \$10,044$ . Option 4 is riskless, so the expected total payoff is  $\$10,000$ . Given these choices and the assumption that you don't care about risk, Option 1 is the best investment.

25. *Suppose Option 3 is your only possibility. If you could pay your friend \$100 to find out extra information about Mike that would indicate with certainty whether he will leave town without paying, would you pay the \$100? What does this say about the value of better information regarding risk?*

This option implies the very real possibility of either receiving nothing (if he actually leaves town), or  $\$10,800$  (if he indeed pays as promised). If you don't pay Mike, you have an expected return of  $\$10,044$  as shown above. If you paid your friend the  $\$100$  and learned that Mike would leave without paying, then obviously you wouldn't loan Mike the money, and you would be left with  $\$9900$ . However, if you paid the friend  $\$100$  and learned that Mike would pay, you would have  $\$10,700$  ( $= \$10,000 \times 1.08 - \$100$ ). After paying your friend Mike, but before knowing the true outcome, your expected return would be  $\$10,644$  ( $\$9900 \times 0.07 + \$10,700 \times 0.93$ ). Paying your friend the  $\$100$  is definitely worth it because it increases your expected return and in addition dramatically reduces the downside risk that you make a bad loan, and increases the certainty of the payoff amount. That is, with asymmetric information (not paying your roommate), you have a range of payoffs of  $\$0$  to  $\$10,800$  versus  $\$9900$  to  $\$10,700$  without asymmetric information. Thus, paying a small amount to improve risk assessment can be very beneficial, a task for which financial intermediaries are well suited.

## ANSWERS TO DATA ANALYSIS PROBLEMS

1. Go to the St. Louis Federal Reserve FRED database, and find data on federal debt held by the Federal Reserve (FDHBFBN), by private investors (FDHBPIN), and by international and foreign investors (FDHBFIN). Using these series, calculate the total amount held and the percentage held in each of the three categories for the most recent quarter available. Repeat for the first quarter of 2000, and compare the results.

See table. Since the year 2000, the Fed has increased its share of federal debt held, and foreign investors have significantly increased its share of debt held. This reflects a significant decline in the share of federal debt held by private investors.

|                   | 2014:Q1       |         | 2000:Q1       |         |
|-------------------|---------------|---------|---------------|---------|
|                   | Held (\$bil.) | % Share | Held (\$bil.) | % Share |
| Fed               | 2319.6        | 12.5%   | 501.7         | 10.5%   |
| Private Investors | 10,300.0      | 55.5%   | 3182.8        | 66.7%   |
| Foreign Investors | 5949.4        | 32.0%   | 1085.0        | 22.7%   |
| Total             | 18569.0       |         | 4769.5        |         |

2. Go to the St. Louis Federal Reserve FRED database, and find data on the total assets of all commercial banks (TLACBM027SBOG) and the total assets of money market mutual funds (MMMFFAQ027S). Transform the commercial bank assets series to quarterly by adjusting the Frequency setting to "Quarterly." Calculate the percent increase in growth of assets for each series, from January 2000 to the most recent quarter available. Which of the two financial intermediaries has experienced the most growth?

See table below. Commercial bank assets have increased by 147% from 2000:Q1 to 2013:Q4, while money market mutual fund assets have increased also, but by less than commercial banks during that time, at 60.9%

|                           | 2013:Q4         | 2000:Q1        |
|---------------------------|-----------------|----------------|
| Commercial Banks          | \$13,929.9 Bil. | \$5,639.2 Bil. |
| Money Market Mutual Funds | \$2,678.3 Bil.  | \$1,664.8 Bil. |