

Chapter 1

ANSWERS TO QUESTIONS

1. *What is the typical relationship among interest rates on three-month Treasury bills, long-term Canada bonds, and corporate bonds?*

The interest rate on three-month Treasury bills fluctuates more than the other interest rates and is lower on average. The interest rate on corporate bonds is higher on average than the other interest rates.

2. *What effect might a fall in stock prices have on business investment?*

The lower price for a firm's shares means that it can raise a smaller amount of funds, so investment in facilities and equipment will fall.

3. *Explain the main difference between a bond and a common stock.*

A bond is a debt instrument, which entitles the owner to receive periodic amounts of money (predetermined by the characteristics of the bond) until its maturity date. A common stock, however, represents a share of ownership in the institution that has issued the stock. In addition to its definition, it is not the same to hold bonds or stock of a given corporation, since regulations state that stockholders are residual claimants (i.e., the corporation has to pay all bondholders before paying stockholders).

4. *Explain the link between well-performing financial markets and economic growth. Name one channel through which financial markets might affect economic growth and poverty.*

Well-performing financial markets tend to allocate funds to its more efficient use, thereby allowing the best investment opportunities to be undertaken. The improvement in the allocation of funds results in a more efficient economy, which stimulates economic growth (and thereby poverty reduction).

5. *What was the main cause of the global financial crisis that began in 2007?*

The United States' economy was hit by the worst financial crisis since the Great Depression. Defaults in subprime residential mortgages led to major losses in financial institutions, producing not only numerous bank failures but also the demise of two of the largest investment banks in the United States. These factors led to the "Great Recession" that began late in 2007.

6. *Can you think of a reason why people in general do not lend money to one another to buy a house or a car? How would your answer explain the existence of banks?*

In general, people do not lend large amounts of money to one another because of several information problems. In particular, people do not know about the capacity of other people to repay their debts or the effort they will make to repay their debts. Financial intermediaries, in particular commercial banks, tend to solve these problems by acquiring information about potential borrowers and writing and enforcing contracts that encourage

lenders to repay their debt and/or maintain the value of the collateral.

7. *What are the other important financial intermediaries in the economy, besides banks?*

Other important financial intermediaries are Trust and loan companies, credit unions, *caisses populaires*, insurance companies, mutual funds, pension funds, and finance companies.

8. *Can you date the latest financial crisis in the United States or in Europe? Are there reasons to think that these crises might have been related? Why?*

The latest financial crisis in the United States and Europe occurred in 2007–2009. At the beginning, it hit mostly the U.S. financial system, but it then quickly moved to Europe, since financial markets are highly interconnected. One specific way in which these markets were related is that some financial intermediaries in Europe held securities backed by mortgages originating in the United States, and when these securities lost a considerable part of their value, the balance sheet of European financial intermediaries was adversely affected.

9. *Has the inflation rate in Canada increased or decreased in the past few years? What about interest rates?*

From 2014 to mid-2017, both the inflation rate and interest rates have been somewhat low, but they have increased more recently.

10. *If history repeats itself and we see a decline in the rate of money growth, what might you expect to happen to*

- a. *Real output?*
- b. *The inflation rate?*
- c. *Interest rates?*

The data in Figures 1-3, 1-4, and 1-6 suggest that real output, the inflation rate, and interest rates would all fall.

11. *When interest rates decrease, how might businesses and consumers change their economic behaviour?*

Businesses would increase investment spending because the cost of financing this spending is now lower, and consumers would be more likely to purchase a house or a car because the cost of financing their purchase is lower.

12. *Is everybody worse off when interest rates rise?*

No. It is true that people who borrow to purchase a house or a car are worse off because it costs them more to finance their purchase; however, savers benefit because they can earn higher interest rates on their savings.

13. *Why do managers of financial institutions care so much about the activities of the Bank of Canada?*

Because the Bank of Canada affects interest rates, inflation, and business cycles, all of

which have an important impact on the profitability of financial institutions.

14. *How does the current size of the Canadian budget deficit compare to the historical budget deficit or surplus for the time period since 1960?*

The deficit as a percentage of GDP expanded dramatically in 2007; in 2010, the deficit to GDP ratio was over 4%, well above the historical average of around 1.3% since 1960. In the most recent year, 2017, the deficit turned out to be less than what was expected by over \$5 billion.

15. *How would a fall in the value of the pound sterling affect British consumers?*

It makes foreign goods more expensive, so British consumers will buy fewer foreign goods and more domestic goods.

16. *How would an increase in the value of the pound sterling affect Canadian businesses?*

It makes British goods more expensive relative to Canadian goods. Thus, Canadian businesses will find it easier to sell their goods in Canada and in the United Kingdom, and the demand for their products will rise.

17. *How can changes in foreign exchange rates affect the profitability of financial institutions?*

Changes in foreign exchange rates change the value of assets held by financial institutions and thus lead to gains and losses on these assets. Also changes in foreign exchange rates affect the profits made by traders in foreign exchange who work for financial institutions.

18. *According to Figure 1-8, in which years would you have chosen to visit the Canadian Rockies rather than Grand Canyon in Arizona?*

In the mid-1980s and in the late 1990s, the value of the Canadian dollar was low, making travel abroad relatively more expensive; thus, it was a good time to vacation in Canada and see the Canadian Rockies. With the rise in the Canadian dollar's value in the 2000s, travel abroad became relatively cheaper, making it a good time to visit the Grand Canyon. This was also true, to a lesser extent, in the early 2010s.

19. *When the dollar is worth more in relation to currencies of other countries, are you more likely to buy Canadian-made or foreign-made jeans? Are Canadian companies that manufacture jeans happier when the dollar is strong or when it is weak? What about a Canadian company that is in the business of importing jeans into Canada?*

When the dollar increases in value, foreign goods become less expensive relative to Canadian goods; thus, you are more likely to buy American-made jeans than Canadian-made jeans. The resulting drop in demand for Canadian-made jeans because of the strong dollar hurts Canadian jeans manufacturers. On the other hand, the Canadian company that imports jeans into Canada now finds that the demand for its product has risen, so it is better off when the dollar is strong.

20. *Much of the Canadian government debt is held by foreign investors as Canada bonds and bills. How do fluctuations in the dollar exchange rate affect the value of that debt held by foreigners?*

As the dollar becomes stronger (worth more) relative to a foreign currency, one dollar is equivalent to (can be exchanged for) more foreign currency. Thus, for a given face value of bond holdings, a stronger dollar will yield more home currency to foreigners, so the asset will be worth more to foreign investors. Likewise, a weak dollar will lead to foreign bond holdings worth less to foreigners.

ANSWERS TO APPLIED PROBLEMS

21. *The following table lists the foreign exchange rate between U.S. dollars and British pounds (GBP) during May 2017. Which day would have been the best for converting US\$200 into British pounds? Which day would have been the worst? What would be the difference in pounds?*

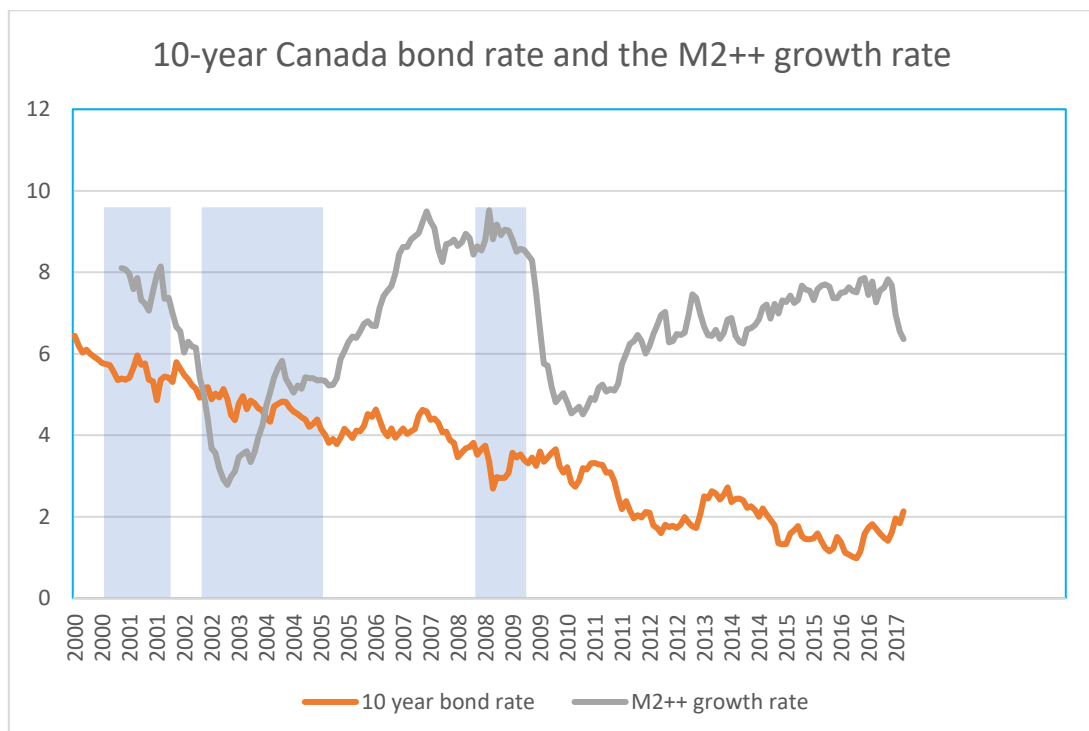
5-01	1.2917
5-02	1.2921
5-03	1.2916
5-04	1.2910
5-05	1.2950
05-08	1.2942
05-09	1.2939
05-10	1.2939
05-11	1.2885
05-12	1.2880
05-15	1.2917
05-16	1.2912
05-17	1.2944
05-18	1.3009
05-19	1.3018
05-22	1.3006
05-23	1.2984
05-24	1.2935
05-25	1.2954
05-26	1.2795
05-30	1.2858
05-31	1.2905

The best day is 5/26. At a rate of US\$1.2795/pound, you would have £156.31. The worst day is 5/19. At US\$1.3018/pound, you would have £153.63, or a difference of £2.68.

ANSWERS TO DATA ANALYSIS PROBLEMS

1. *Go to the Statistics Canada CANSIM database, and find data on the M2++ (gross) money supply and the 10-year Canada bond rate from January 2000 to September 2017. Add the two series into a single graph. Transform the M2++ money supply variable into the M2++ growth rate by adjusting the units for the M2++ money supply to “Percent Change from Year Ago.”*
 - a. *In general, how have the growth rate of the M2++ money supply and the 10-year Canada bond rate behaved during recessions and during expansionary periods since the year 2000?*

Since the year 2000, during both recessions and expansions, the 10-year Canada bond rate shows an overall declining trend. The M2++ money supply growth rate, on the other hand, shows a cyclical pattern. The growth rate of M2++ is positive throughout the years, but it does not show any consistent pattern in recessions and expansions, as can be seen in the following figure (in which shaded areas represent recessions).



- b. *In general, is there an obvious, stable relationship between money growth and the 10-year interest rate since the year 2000?*

No. The 10-year Canada bond rate shows an overall declining trend irrespective of the growth rate of M2++.

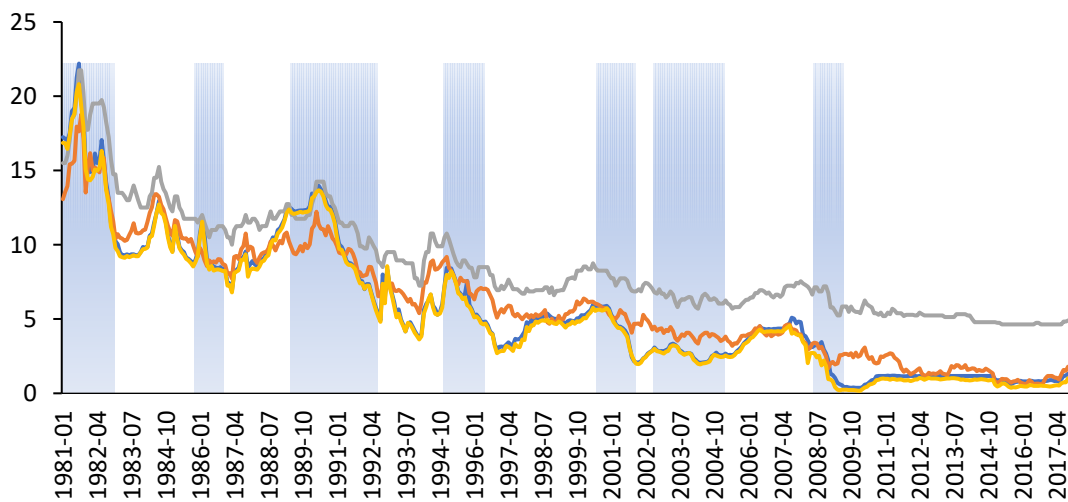
- c. *Compare the money growth rate and the 10-year interest rate for the most recent month available to the rates for January 2000. How do the rates compare?*
- The money growth rate and the 10-year interest rate for the most recent month (September 2017) is 6.35% and 2.13%, respectively. The values of these variables were 5.75% and 6.44%, respectively, in January 2000. So, the money growth rate

increased by only 0.6 percentage points, but the 10-year interest rate declined by 4.31 percentage points.

2. *Go to the Bank of Canada website, and find monthly data (from January 1981 to October 2017) on the three-month treasury bill rate (CANSIM series V122541), the three-month prime corporate paper rate (CANSIM series V122491), the five-year Canada bond rate (CANSIM series V122540), and the five-year conventional mortgage rate (CANSIM series V122521).*
 - a. *In general, how do these interest rates behave during recessions and during expansionary periods?*

In general, these interest rates move together. They decline during recessions and increase during expansions, as can be seen in the following figure (in which shaded areas represent recessions).

Interest rates in Canada



- b. *In general, how do the three-month rates compare to the five-year rates? How do the treasury rates compare to the respective commercial paper and mortgage rates?*

The three-month rate is lower than the five-year Canada bond rate and the commercial paper and mortgage rates.

- c. *For the most recent available month of data, take the average of the three-month rates and compare it to the average of the three-month rates from January 2000. How do the averages compare?*

The average of the three-month rates in the most recent available month (October 2017) is 1.1125. The average was 5.163 in January 2000.

- d. *For the most recent available month of data, take the average of the five-year rates and compare it to the average of the five-year rates from January 2000. How do the averages compare?*

The average of the five-year rates in the most recent available month (October 2017) is 3.345. The average was 7.465 in January 2000.

Chapter 2

ANSWERS TO QUESTIONS

1. *If I can buy a car today for \$5000 and it is worth \$10 000 in extra income to me next year because it enables me to get a job as a travelling salesperson, 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 \$4500 (90% of \$5000), but as a result, I will earn an additional \$10 000, so I will be ahead of the game by \$5500. 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 channelled 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. *Give at least three examples of a situation in which financial markets allow consumers to better time their purchases.*

Examples of how financial markets allow consumers to better time their purchases include:

- The purchase of a durable good, like a car or furniture
- Paying for tuition
- Paying the cost of repairing a flooded basement

In all three cases, consumers were able to pay for a good or service (education or the reparation of a flooded basement) without having to wait to save enough and only then being able to afford such goods and services.

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. *Suppose that Toyota sells yen-denominated bonds in Tokyo. Is this debt instrument considered a Eurobond? How would your answer change if the bond were sold in New York?*

If the yen-denominated bond is sold in Tokyo, then it is not considered a Eurobond. If the bond is sold in New York, then it is considered a Eurobond.

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. Overnight funds

Treasury bills are short-term debt instruments issued by the Canadian government to cover immediate spending obligations (i.e., finance deficit spending). Certificates of deposit (CD) 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. Overnight 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 benefited. 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 were 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 neighbour 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 neighbour are high (legal fees, fees for a credit check, and so on), you will probably not be able 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 neighbour.

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 channelling 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 affect 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.

23. *Financial regulation is similar, but not exactly the same, in industrialized countries. Discuss why it might be desirable—or undesirable—to have the same financial regulation across industrialized countries.*

This is a topic for which there is no clear answer. On one side, it would be beneficial to have financial regulations that are identical in all countries to avoid financial markets participants migrating their business to countries with fewer regulations. On the other side, all countries are different, and designing a common set of financial regulations seems to be a rather difficult task. Most countries would want to maintain at least part of their regulations, so consensus is difficult to reach.

ANSWERS TO APPLIED PROBLEMS

24. *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 chequing account that earns 2%. The CDIC 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.

a. If you are risk-neutral (i.e., 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.)

- b. Suppose Option 3 and Option 4 are your only choices. 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?
- a. With Option 1, since deposits are insured, it can be assumed that this is 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.
- b. Option 3 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 your friend to learn about Mike, you have an expected return of \$10 044 as shown previously. 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 your friend \$100 and learned that Mike would pay, you would have \$10 700 ($= \$10\,000 \times 1.08 - \100). After paying your friend to learn about Mike, but before knowing the true outcome, your expected return would be \$10 644 ($\$9900 \times 0.07 + \$10\,700 \times 0.93$). Under Option 3, 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 it increases the certainty of the payoff amount. That is, with asymmetric information (not paying your friend), 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 under Option 3 can be very beneficial, a task for which financial intermediaries are well suited. Option 4 is riskless, so the expected total payoff is \$10 000. If you are more risk-averse, Option 4 is likely the better option. However, if you are more risk-neutral, then paying your friend the \$100 to have a minimum \$9900 payment and possibly as much as \$10 700 is the better scenario.

ANSWERS TO DATA ANALYSIS PROBLEMS

1. *Go to the CANSIM database, and find data on the total Canadian dollar assets held by chartered banks in Canada (series V36852). What is the percent increase in growth of assets, from January 2000 to September 2017?*

It is 254%.

2. *Go to the St. Louis Federal Reserve FRED database, and find data on the total assets of all U.S. commercial banks (TLAACBM027SBOG) and the total assets of U.S. 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 the following table Commercial bank assets have increased by 187% from 2000:Q1 to 2017:Q1, while money market mutual fund assets have increased also, but by less than commercial banks during that time, at 57.1%.

	2017:Q1	2000:Q1
Commercial Banks	\$16 158.7 Bil.	\$5639.9 Bil.
Money Market Mutual Funds	\$ 2664.3 Bil.	\$1696.1 Bil.