Financial Markets and Institutions 12th edition Madura Solutions Manual

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Chapter 2

Determination of Interest Rates

Outline

Loanable Funds Theory
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- Impact of Inflation on Interest Rates
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- Impact of Foreign Flows of Funds on Interest Rates
- Summary of Forces That Affect Interest Rates

Forecasting Interest Rates

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Key Concepts

1. Explain the Loanable Funds Theory by deriving demand and supply schedules for loanable funds.

2. Explain the Fisher Effect, and tie it in with Loanable Funds Theory by explaining how inflation affects the demand and supply schedules for loanable funds.

3. Provide additional applications (especially current events) one at a time to help illustrate how events can affect the demand and supply schedules, and therefore influence interest rates.

4. Explain how forecasts of interest rates are needed to make financial decisions, which require forecasts of shifts in the demand and supply schedules for loanable funds.

5. Introduce several possible events simultaneously to illustrate how difficult it can be to forecast interest rate movements when several events are occurring at once.

POINT/COUNTER-POINT:
Does a Large Fiscal Budget Deficit Result in Higher Interest Rates?

POINT: No. In some years (such as 2008), the fiscal budget deficit was large and interest rates were very low.

COUNTER-POINT: Yes. When the federal government borrows large amounts of funds, it can crowd out other potential borrowers, and the interest rates are bid up by the deficit units.

WHO IS CORRECT? Use the Internet to learn more about this issue and then formulate your own opinion.

ANSWER: A large budget deficit does not automatically cause high interest rates. However, it does result in a large demand for funds, which will place upward pressure on interest rates unless there are offsetting forces.

Questions

1. Interest Rate Movements. Explain why interest rates changed as they did over the past year.

ANSWER: This exercise should force students to consider how the factors that influence interest rates have changed over the last year, and assess how these changes could have affected interest rates.

2. Interest Elasticity. Explain what is meant by interest elasticity. Would you expect federal government demand for loanable funds to be more or less interest-elastic than household demand for loanable funds? Why?

ANSWER: Interest elasticity of supply represents a change in the quantity of loanable funds supplied in response to a change in interest rates. Interest elasticity of demand represents a change in the quantity of loanable funds demanded in response to a change in interest rates.

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The federal government demand for loanable funds should be less interest elastic than the consumer demand for loanable funds, because the government's planned borrowings will likely occur regardless of the interest rate. Conversely, the quantity of loanable funds by consumers is more responsive to the interest rate level.

3. **Impact of Government Spending.** If the federal government planned to expand the space program, how might this affect interest rates?

   ANSWER: An expanded space program would (a) force the federal government to increase its budget deficit, (b) possibly force any firms involved in facilitating the program to borrow more funds. Consequently, there is a greater demand for loanable funds. The additional spending could cause higher income and additional saving. Yet, this impact is not likely to be as great. The likely overall impact would therefore be upward pressure on interest rates.

4. **Impact of a Recession.** Explain why interest rates tend to decrease during recessionary periods. Review historical interest rates to determine how they react to recessionary periods. Explain this reaction.

   ANSWER: During a recession, firms and consumers reduce their amount of borrowing. The demand for loanable funds decreases and interest rates decrease as a result.

5. **Impact of the Economy.** Explain how the expected interest rate in one year depends on your expectation of economic growth and inflation.

   ANSWER: The interest rate in the future should increase if economic growth and inflation are expected to rise, or decrease if economic growth and inflation are expected to decline.

6. **Impact of the Money Supply.** Should increasing money supply growth place upward or downward pressure on interest rates?

   ANSWER: If one believes that higher money supply growth will not cause inflationary expectations, the additional supply of funds places downward pressure on interest rates. However, if one believes that inflation expectations do erupt as a result, demand for loanable funds will also increase, and interest rates could increase (if the increase in demand more than offsets the increase in supply).

7. **Impact of Exchange Rates on Interest Rates.** Assume that if the U.S. dollar strengthens, it can place downward pressure on U.S. inflation. Based on this information, how might expectations of a strong dollar affect the demand for loanable funds in the United States and U.S. interest rates? Is there any reason to think that expectations of a strong dollar could also affect the supply of loanable funds? Explain.

   ANSWER: As a strong U.S. dollar dampens U.S. inflation, it can reduce the demand for loanable funds, and therefore reduce interest rates. The expectations of a strong dollar could also increase the supply of funds because it may encourage saving (there is less concern to purchase goods before prices rise when inflationary expectations are reduced). In addition, foreign investors may invest more funds in the United States if they expect the dollar to strengthen, because that could increase their return on investment.

8. **Nominal versus Real Interest Rate.** What is the difference between the nominal interest rate and real interest rate? What is the logic behind the implied positive relationship between expected inflation and nominal interest rates?

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ANSWER: The nominal interest rate is the quoted interest rate, while the real interest rate is defined as the nominal interest rate minus the expected rate of inflation. The real interest rate represents the recent nominal interest rate minus the recent inflation rate.

Investors require a positive real return, which suggests that they will only invest funds if the nominal interest rate is expected to exceed inflation. In this way, the purchasing power of invested funds increases over time. As inflation rises, nominal interest rates should rise as well since investors would require a nominal return that exceeds the inflation rate.

9. **Real Interest Rate.** Estimate the real interest rate over the last year. If financial market participants overestimate inflation in a particular period, will real interest rates be relatively high or low? Explain.

   ANSWER: This exercise forces students to measure last year's nominal interest rate and inflation rate.

   If inflation is overestimated, the real interest rate will be relatively high. Investors had required a relatively high nominal interest rate because they expected inflation to be high (according to the Fisher effect).

10. **Forecasting Interest Rates.** Why do forecasts of interest rates differ among experts?

    ANSWER: Various factors may influence interest rates, and changes in these factors will affect interest rate movements. Experts disagree about how various factors will change. They also disagree about the specific influence these factors have on interest rates.

Advanced Questions

11. **Impact of Stock Market Crises.** During periods when investors suddenly become fearful that stocks are overvalued, they dump their stocks, and the stock market experiences a major decline. During these periods, interest rates also tend to decline. Use the loanable funds framework discussed in this chapter to explain how the massive selling of stocks leads to lower interest rates.

    ANSWER: When investors shift funds out of stocks, they move it into money market securities, causing an increase in the supply of loanable funds, and lower interest rates.

12. **Impact of Expected Inflation.** How might expectations of higher global oil prices affect the demand for loanable funds, the supply of loanable funds, and interest rates in the United States? Will this affect the interest rates of other countries in the same way? Explain.

    ANSWER: The expectations of higher oil prices will cause concern about the possible increase in inflation. Since higher inflation can increase interest rates, it will cause an expectation of higher interest rates in the U.S. Firms and government agencies may borrow more funds now before prices increase and before interest rates increase. Consumers may use their savings now to buy products before the prices increase. Therefore, the demand for loanable funds should increase, the supply of loanable funds should decrease, and interest rates should increase in the U.S.

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The impact of higher global oil prices in other countries is not necessarily the same. If the country produces its own oil, it can set the oil prices in its country. If it can prevent high oil prices in its country, then the prices of products (gasoline) and services (transportation) may not be affected. Therefore, interest rates may not be affected.

13. **Global Interaction of Interest Rates.** Why might you expect interest rate movements of various industrialized countries to be more highly correlated in recent years than in earlier years?

    ANSWER: Interest rates among countries are expected to be more highly correlated in recent years because financial markets are more geographically integrated. More international financial flows will occur to capitalize on higher interest rates in foreign countries, which affects the supply and demand conditions in each market. As funds leave a country with low interest rates, this places upward pressure on that country's interest rates. The international flow of funds caused this type of reaction.

14. **Impact of War.** War tends to cause significant reactions in financial markets. Why might a war in the Middle East place upward pressure on U.S. interest rates? Why might some investors expect a war like this to place downward pressure on U.S. interest rates?
    ANSWER: A war places upward pressure on U.S. interest rates because it may (1) increase inflationary expectations in the United States if oil prices increase abruptly, and (2) increase the expected U.S. budget deficit as government expenditures were necessary to boost military support. However, it may also cause some analysts to revise their forecasts of economic growth downward. The slower economy reflects a reduced corporate demand for funds, which by itself places downward pressure on interest rates. If inflation was not a concern, the Fed may attempt to increase money supply growth to stimulate the economy. However, the inflationary pressure can restrict the Fed from increasing the money supply to stimulate the economy (since any stimulative policy could cause higher inflation).

15. **Impact of September 11.** Offer an argument for why the terrorist attack on the United States on September 11, 2001 could have placed downward pressure on U.S. interest rates. Offer an argument for why that attack could have placed upward pressure on U.S. interest rates.

    ANSWER: The terrorist attack could cause a reduction in spending related to travel (airlines, hotels), and would also reduce the expansion by those types of firms. This reflects a decline in the demand for loanable funds, and places downward pressure on interest rates. Conversely, the attack increases the amount of government borrowing needed to support a war, and therefore places upward pressure on interest rates.

16. **Impact of Government Spending.** Jayhawk Forecasting Services analyzed several factors that could affect interest rates in the future. Most factors were expected to place downward pressure on interest rates. Jayhawk also expected that although the annual budget deficit was to be cut by 40 percent from the previous year, it would still be very large. Thus, Jayhawk believed that the deficit's impact would more than offset the effects of other factors, so it forecast interest rates to increase by 2 percent. Comment on Jayhawk's logic.

    ANSWER: A reduction in the deficit should free up some funds that had been used to support the government borrowings. Thus, there should be additional funds available to satisfy other borrowing needs. Given this situation plus the other information, Jayhawk should have forecasted lower interest rates.

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17. **Decomposing Interest Rate Movements.** The interest rate on a one-year loan can be decomposed into a one-year risk-free (free from default risk) component and a risk premium that reflects the potential for default on the loan in that year. A change in economic conditions can affect the risk-free rate and the risk premium. The risk-free rate is normally affected by changing economic conditions to a greater degree than the risk premium. Explain how a weaker economy will likely affect the risk-free component, the risk premium, and the overall cost of a one-year loan obtained by (a) the Treasury, and (b) a corporation. Will the change in the cost of borrowing be more pronounced for the Treasury or for the corporation? Why?

    ANSWER: The weaker economy will likely reduce the risk-free component and will increase the risk premium. The overall cost of borrowing is reduced for a loan to the Treasury and a loan to a corporation. There is a partial offsetting effect on the interest rate of the loan to the corporation. However, the Treasury does not have risk of default so there is no effect on the risk premium on a loan to the Treasury. The weaker economy will have a more pronounced impact on the interest rate of the loan to the Treasury, because there is no offsetting effect.

18. **Forecasting Interest Rates Based on Prevailing Conditions.** Consider the prevailing conditions for inflation (including oil prices), the economy, the budget deficit, and the Fed's monetary policy that could affect interest rates. Based on these conditions, do you think interest rates will likely increase or decrease during this semester? Offer some logic to support your answer. Which factor do you think will have the greatest impact on interest rates?

    ANSWER: This question is open-ended. It requires students to apply the concepts that were presented in this chapter in order to develop their own view. This question can be useful for class discussion because it will likely lead to a variety of answers, which reflects the dispersed opinions of market participants.

19. **Impact of Economic Crises on Interest Rates.** When economic crises in countries are due to a weak economy, local interest rates tend to be very low. However, if the crisis was caused by an unusually high rate of inflation, interest rates tend to be very high. Explain why.

    ANSWER: A weak economy causes a reduction in the demand for loanable funds, because corporations reduce their expansion plans as they anticipate a reduced demand for their products. The reduced demand for loanable funds results in lower interest rates.
    However, if a crisis is caused by high inflation, corporations and households engage in heavy borrowing and spending before prices rise further. Thus, the strong demand for loanable funds places upward pressure on interest rates.

20. **U.S. Interest Rates During the Credit Crisis.** During the credit crisis, U.S. interest rates were extremely low, which enabled businesses to borrow at a low cost. Holding other factors constant, this should result in a higher number of feasible projects, which should encourage businesses to borrow more money and expand. Yet, many businesses that had access to loanable funds were unwilling to borrow during the credit crisis. What other factor changed during this period that more than offset the potentially favorable effect of the low interest rates on project feasibility, therefore discouraging businesses from expanding?

    ANSWER: Businesses recognized that the cash flows to be generated from their projects would be low because the demand for their products and services was limited. Households could not afford to purchase more products. Thus, while low interest rates allow businesses to borrow funds cheap, many possible projects were not feasible because the expected cash flows were not sufficient.

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21. Political Influence on Interest Rates. Offer an argument for why a political regime that favors a large government will cause interest rates to be higher. Offer at least one example of why a political regime that favors a large government will cause interest rates to be lower [Hint: Recognize that the government intervention in the economy can influence other factors that affect interest rates.]

ANSWER**:** A political regime that favors a large government will have more government expenditures. Assuming that taxes are not affected, the fiscal budget deficit will be larger. As the government borrows more to cover the fiscal budget deficit, it increases the demand for loanable funds, and this causes interest rates to be higher.
However, if the government's programs improve economic conditions, this could affect other factors that influence interest rates. For example, if the economic conditions are improved as a result of the government programs, this might result in more income to households and lower income, and lower unemployment (lower unemployment compensation paid by the government). Under these conditions, a larger government will not necessarily result in a larger fiscal budget deficit.

22. Impact of Stock Market Uncertainty. Consider a period in which stock prices are very high, such that investors begin to think that stocks are overvalued and their valuations are very uncertain. If investors decide to move their money into much safer investments, how do you think this would affect general interest rate levels? In your answer, use the loanable funds framework by explaining how the supply or demand for loanable funds would be affected by the investor actions, and how this force would affect interest rates.

ANSWER**:** If investors sell their stocks, they receive cash and may deposit their cash in banks. This results in an increase in the supply of loanable funds, which places downward pressure on interest rates.

23. Impact of the European Economy. Use the loanable funds framework to explain how European economic conditions might affect U.S. interest rates.

ANSWER**:** Weak European conditions could weaken U.S. economic conditions, because the economies are integrated through international trade and investment. If the European economy causes economic conditions in the U.S. to weaken, it can reduce the demand for loanable funds in the U.S. In addition, the weak European economy might cause European firms to borrow fewer funds from the U.S. market. Either of the forces explained here reflect a decline in the demand for loanable funds, which places downward pressure on interest rates.

CRITICAL THINKING QUESTION

How a Credit Crisis Can Affect Interest Rates Interest rates are influenced by various factors reflecting the demand for funds and the supply of funds available in the credit markets. Write a short essay in which you identify the key factors that changed the demand for and supply of funds during the credit crisis and offer an explanation for why those factors caused a major decline in market interest rates. What lessons may be learned from the credit crisis that could prevent such an abrupt decline in the demand for funds in the future?

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ANSWER

During the crisis, the housing market crashed, resulting in an excessive surplus of homes relative to the demand for those homes. Consequently, the demand for new mortgages declined substantially, which reflects a decline in demand for funds. In addition, the Fed attempted to ensure availability of funds in the financial system, by using monetary policy to expand money supply. This resulted in a large increase in the supply of funds available, and when combined with the decline in demand for funds, resulted in a decline in market interest rates.

The decline in demand for funds was due to a major decline in housing activity, which was caused by the excessive production of new homes that resulted from an excessive number of unqualified buyers of homes. So if the regulators can prevent unqualified buyers from buying homes, they may be able to prevent another housing bubble, which can prevent an abrupt decline in demand for housing (and mortgages) that results from a housing bubble.

Interpreting Financial News

Interpret the following comments made by Wall Street analysts and portfolio managers.

a. "The flight of funds from bank deposits to U.S. stocks will pressure interest rates."

   As the supply of loanable funds declines (due to bank deposit withdrawals), there will be upward pressure on interest rates.

b. "Since Japanese interest rates have recently declined to very low levels, expect a reduction in U.S. interest rates."

   As Japanese interest rates decline, Japanese savers invest more loanable funds in the United States, which places downward pressure on U.S. interest rates.

c. "The cost of borrowing by U.S. firms is dictated by the degree to which the federal government spends more than it taxes."

   As the federal government spends more than it taxes, it borrows the difference; the greater the amount borrowed, the higher the pressure on U.S. interest rates.

Managing in Financial Markets

As the treasurer of a manufacturing company, your task is to forecast the direction of interest rates. You plan to borrow funds and may use the forecast of interest rates to determine whether you should obtain a loan with a fixed interest rate or a floating interest rate. The following information can be considered when assessing the future direction of interest rates:

- Economic growth has been high over the last two years, but you expect that it will be stagnant over the next year.

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- Inflation has been 3 percent over each of the last few years, and you expect that it will be about the same over the next year.
- The federal government has announced major cuts in its spending, which should have a major impact on the budget deficit.
- The Federal Reserve is not expected to affect the existing supply of loanable funds over the next year.
- The overall level of savings by households is not expected to change.

a. Given the preceding information, assess how the demand for and the supply of loanable funds would be affected (if at all), and predict the future direction of interest rates.

The demand for loanable funds should decline in response to: (1) stagnant economic growth (because a relatively low level of borrowing will be needed), and (2) a major cut in government spending. The supply of loanable funds should remain unchanged because the savings level is not expected to change, and the Fed is not expected to affect the existing money supply. Given a large decline in the demand for loanable funds and no significant change in the supply of loanable funds, U.S. interest rates should decline.

b. You can obtain a one-year loan at a fixed-rate of 8 percent or a floating-rate loan that is currently at 8 percent but would be revised every month in accordance with general interest rate movements. Which type of loan is more appropriate based on the information provided?

Since interest rates are expected to decline, you should prefer the floating-rate loan. As interest rates decline, the rate charged on this type of loan would decline.

c. Assume that Canadian interest rates have abruptly risen just as you have completed your forecast of future U.S. interest rates. Consequently, Canadian interest rates are now 2 percentage points above U.S. interest rates. How might this specific situation place pressure on U.S. interest rates? Considering this situation along with the other information provided, would you change your forecast of the future direction of U.S. interest rates?

This situation could encourage U.S. individuals and firms to withdraw their savings from U.S. financial institutions and send their funds to Canada to earn a higher interest rate (although they would have to convert their U.S. dollars into Canadian dollars and are therefore exposed to exchange rate risk). To the extent that savings are withdrawn from U.S. financial institutions, there would be a reduction in the supply of loanable funds in the U.S. Consequently, this specific situation places upward pressure on the U.S. interest rates.

While this specific situation places upward pressure on U.S. interest rates, the economic growth and the budget deficit are expected to place downward pressure on interest rates. Therefore, you would still forecast a decline in U.S. interest rates, unless you believe that the impact of the Canadian situation would overwhelm the impact of the economic growth and the budget deficit

Problems

1. **Nominal Rate of Interest.** Suppose the real interest rate is 6 percent and the expected inflation is 2 percent. What would you expect the nominal rate of interest to be?

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ANSWER:

$$i = E(\text{INF}) + i_r$$
$$i = 2\% + 6\% = 8\%$$

2. **Real Interest Rate.** Suppose that Treasury bills are currently paying 9 percent and the expected inflation is 3 percent. What is the real interest rate?

   ANSWER:

$$i = E(\text{INF}) + i_r$$
$$i_r = i - E(\text{INF})$$
$$i_r = 9\% - 3\% = 6\%$$

Flow of Funds Exercise

How the Flow of Funds Affects Interest Rates

Recall that Carson Company has obtained substantial loans from finance companies and commercial banks. The interest rate on the loans is tied to market interest rates, and is adjusted every six months. Thus, its cost of obtaining funds is sensitive to interest rate movements. Given its expectations that the U.S. economy will strengthen, Carson plans to grow in the future by expanding its business and through acquisitions. Carson expects that it will need substantial long-term financing to pay for this growth, and it plans to borrow additional funds either through loans or by issuing bonds. The company is considering the issuance of stock to raise funds in the next year.

a. Explain why Carson should be very interested in future interest rate movements.

   The future interest rate movements affect Carson's cost of obtaining funds, and therefore may affect the value of its stock.

b. Given Carson's expectations, do you think that the company anticipates that interest rates will increase or decrease in the future? Explain.

   Carson expects the U.S. economy to strengthen, and therefore should expect that interest rates will increase (assuming other things held constant).

c. If Carson's expectations of future interest rates are correct, how would this affect its cost of borrowing on its existing loans and on future loans?

   Carson's cost of borrowing will increase, because the interest rate on prevailing and future loans would be tied to market interest rates.

d. Explain why Carson's expectations about future interest rates may affect its decision about when to borrow funds and whether to obtain floating-rate or fixed-rate loans.

   If Carson expects rising interest rates, it may prefer to lock in today's interest rate for a period that reflects the length of time that it will need funds. In this way, the cost of funds borrowed would be insulated from the changes in market interest rates.

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