CHAPTER 2

MONEY, CREDIT, AND THE DETERMINATION OF INTEREST RATES

CHAPTER SUMMARY AND SUGGESTIONS FOR TEACHING

The purpose of Chapter 2 is to acquaint the student with the fundamental relationships between monetary policy, monetary growth rates, inflation, expected inflation, and interest rates. Because interest rates play such an important role in finance and real estate finance, this chapter is designed to develop a sound understanding of how interest rates are determined. This chapter discusses not only the determination of the general level of interest rates but also factors that influence the interest- rate or yield on specific securities.

Insofar as the general level of rates is concerned, Chapter 2 focuses on a monetarist model that traces the relationship between monetary policy and interest rates through what is termed the transition mechanism. In this mechanism, money supply growth affects inflation, which in turn affects inflationary expectations which in turn affects the general level of rates. The relationship is positive but with a temporary liquidity effect whereby an increase in the money supply growth rate depresses interest rates only in the immediate short-run. After a discussion of the transition mechanism the chapter turns to a discussion of the characteristics that affect the yields on specific securities.

In this chapter the instructor should emphasize the effect of monetary policy and money supply growth on inflation (the quantity theory of money developed by Fisher and extended by Friedman) and the effect of inflation on inflationary expectations. The role of inflationary expectations in the determination of the general level of interest rates should also be emphasized. The instructor may want to specifically address the decade of the 1970s. The data from this decade clearly demonstrates the relationship between money supply growth, inflation, and interest rates.

Next, the instructor should emphasize how the individual characteristics of credit instruments affect the yield determined in the marketplace. Emphasize the role of risks such as default, liquidity (maturity), and callability. In this regard, a brief introduction of the callability risk of pass-through securities would be helpful so that the student will have been exposed to this concept prior to reading Chapter 10 and Chapter 11.

ANSWERS TO REVIEW QUESTIONS

Question 2-1

A. The real, risk-free rate is that rate which would exist on default-free (and free of other risks) obligations in an inflation-free environment. Most economists believe that the real rate of interest is approximately one to three percent.

B. The actual yield on a corporate bond may be greater than the risk-free rate because of default risk, the existence of inflation, callability risk, maturity risk, or, if the firm is small, liquidity risk.

Question 2-2

A. The equation of exchange, MV = PT, is an identity that indicates that the money supply times its velocity is equal to the amount of real transactions times the price level; or the amount of money spent in a given period is equal to the amount of money received.

B. In the equation, velocity, V, and the amount of real transactions, T, are held to be constant or sluggish meaning that the price level, P, changes in direct proportion to the money supply, M. Further, the direction of causality runs from changes in the money supply to changes in prices, not the reverse.

Question 2-3

A. The Gibson paradox is the observation that there is a positive and direct correlation between changes in the money supply and interest rates. This is contrary to the liquidity theory that predicts an inverse relationship. The explanation is found in the Fisher equation discussed next.

B. The Fisher equation indicates that the nominal rate of interest includes a component for expected or anticipated inflation. Specifically, the nominal rate equals the real estate plus expected inflation. Expected inflation is, in part, dependent on the most recent inflationary experience.

C. The Fisher equation explains the Gibson paradox once it is realized that changes in the money supply create inflation and, thus, inflationary expectations in the future.

Question 2-4

Default risk: The risk that the debt issuer will fail to meet the interest and/or principal payments on the obligation.

Maturity risk: The risk that interest rates will change subsequent to the issue of the bond and therefore that the value of the bond will change.

Liquidity risk: The risk that the bond will not be able to be sold in a large and efficient market. If sold in a "thin" market a discount may be applicable.

Callable risk: The risk that the bond issuer will call (repurchase the bond at or near its face value) the bond prior to maturity in the event that market interest rates drop.

Question 2-5

A. The yield curve is a locus of points that indicate the yield on securities of various maturities as of a point in time.

B. Liquidity preference theory indicates that investors prefer the short-term instruments because of their liquidity and the insulation from interest rate risk. For this reason investors are willing to pay a greater price or, what is the same, accept a lower yield for short-term securities.

C. Market segmentation theory indicates that there are different markets for short-term and long-term debt instruments. Some investors (demand side) prefer one type of debt instrument over the other and thus are players in two or more different markets.

D. The expectations theory indicates that interest rates on longer-term securities reflect the market's expectations about future interest rates. An upward sloping curve indicates that interest rates are expected to rise in the future and a downward sloping, curve indicates that rates are expected to fall.

Question 2-6

A. The one-year yield one year from today will be higher.

B. The estimate of that rate is 10.2 percent.

Question 2-7

This means that the borrower (mortgagor) has the right to repay the loan without a prepayment penalty in the event that the market rate of interest drops.

SOLUTIONS TO PROBLEMS

Problem 2-1

Case	Real Interest Rate	Nominal Interest Rate	Expected Inflation (in percent)
A.	3.00	8.00	5.00
B.	3.00	6.00	3.00
C.	3.00	6.00	3.00

Problem 2-2

Case	Money Supply (in dollars)	Velocity	Price Level	Real Transactions (in dollars)	GNP (in dollars)
A.	1,000 B	4	8	500 B	4,000 B
B.	1,000 B	5	10	500 B	5,000 B
C.	1,800 B	5	10	900 B	9,000 B
D.	800 B	5	5	800 B	4,000 B

Problem 2-3

Money Supply (in dollars)	Velocity	Price Level	Real Transactions (in dollars)	GNP (in dollars)
		Current		
1,000 B	5	10	500 B	5,000 B
		Next Year		
1,200 B	5	10.91	550 B	6,000 B

Notes: 10.91 = 6,000/550.
9.10% Increase.

Problem 2-4

10/.08 = $125; $10/.09 = $111.11; $10/.12 = $83.33; $10/.14 = $71.42

Problem 2-5

Case	Risk-Free Rate	Nominal Rate (in percent)	Maturity Risk Premium	Callability Risk Premium	Default Risk Premium
A.	3.00	9.00	2.00	1.00	3.00
B.	3.00	9.50	2.00	2.00	2.50
C.	2.50	8.50	1.00	2.00	3.00
D.	2.50	10.00	2.00	1.50	4.00

Problem 2-6

A. $(1.04)^3 = (1.03)^2 (1.X)$
$1.12486 = (1.0609) (1.X)$
$1.0603 = 1.X$
$X = .0603 = 6.03\%$

B. $(1.03)^2 = (1.02) (1.X)$
$(1.0401) = (1.X)$
$X = .0401 = 4.01\%$

Problem 2-7

8% x (1-.3) = 8% x .7= 5.6%