Econ 330 Money and Banking
Handout 1

September 12, 2014

1 Review, Chap 1-4

1.1 Structure of Financial Markets

Debt and Equity Markets: How to Raise Funds?
- debt instrument, such as bond or mortgage, or **equities**, such as common stock
- Primary and Secondary Markets; Exchanges and Over-the-Counter Markets; Money and Capital Markets:

1.2 Financial Market Instruments

1.2.1 Money Market Instruments: (less price fluctuations and less risky)

U.S. Treasury Bills; Negotiable Bank Certificates of Deposit; Commercial Paper; Federal Funds and Security Repurchase Agreement (repos)

1.2.2 Money Markets Rates

prime rate; federal funds rate; Treasury bill rates; LIBOR rate

1.2.3 Capital Market Instruments: (maturity $\geq$ 1 year, wider price fluctuations)

Corporate stocks; Mortgages and Mortgage-Backed Securities; Corporate bonds; U.S. government securities (marketable long-term); U.S. government agency securities; State and Local government bonds, also called municipal bonds; Bank commerical loans; Consumer loans; Commerical and farm mortgages

1.2.4 Capital Market Interest Rates

30-year mortgage; jumbo mortages; five-year adjustable rate mortages (ARMs); new-car loans; 10-year Treasury

1.3 Function of Financial Intermediaries: indirect finance

Transaction Costs; Risk Sharing; Asymmetric Information (Adverse Selection; Moral Hazard)

1.4 Types of financial intermediaries

Depository Institutions(banks)
- Commerical Banks (largest financial intermediary);
- Thrift Institutions(thrifts): savings and loan associations (S&L) and mutual savings banks; credit unions
- Contractual Savings Institutions
- Insurance companies: life insurance companies; fire and casualty insurance companies
- Pension funds and government retuirement funds
- Investment Intermediaries
- Finance companies; Mutual funds; Money market mutual funds; Investment Banks

1.5 Regulation of the Financial System

Securities and Exchange Commission (SEC); Commodities Futures Trading Commission (CFTC); Office of the Comptroller of the Currency; National Credit Union Administration (NCUA); State Banking and Insurance Commissions; Federal Deposit Insurance Corporation (FDIC); Federal Reserve System; Office of Thrift Supervision

1.6 What is Money?

1.6.1 Functions of Money

Medium of Exchange; Unit of Account; Store of Value

1.6.2 Evolution of the Payments System

Commodity Money; Fiat Money; Checks; Electronic Payments; E-Money

1.6.3 Measuring Money

M1; M2 monetary aggregate adds to M1 other assets that are not quite as liquid as those included in M1.

2 Understanding Interest Rates

2.1 Present Value $PV = \frac{CF}{(1+i)^n}$

2.2 Four Types of Credit Market Instruments

- A simple loan; many money market instruments are of this type- for example, commerical loans to businesses
- A fixed-payment loan (i.e., a fully amortized loan): installment loans (such as auto loans) and mortgages are frequently of this type
- A coupon bond: coupon rate is the dollar amount of the yearly coupon payment expressed as a percentage of the face value of the bond; Capital market instruments such as U.S. Treasury bonds and notes and corporate bonds are examples of coupon bonds.
- A discount bond (i.e., a zero-coupon bond): unlike a coupon bond, a discount bond does not make any interest payments; it just pays off the face value.

Simple loans and discount bonds make payment only at their maturity dates, whereas fixed-payment loans and coupon bonds have pyaments periodically until maturity.

2.3 Yield to Maturity

It is the interest rate that equates the present value of cash flow payments received from a debt instrument with its value today.

- Simple Loans, the simple interest rate equals the yield to maturity $PV = \frac{CF}{(1+i)^n}$
- Fixed-payment Loans $LV = \frac{FP}{(1+i)} + \frac{FP}{(1+i)^2} + \frac{FP}{(1+i)^3} + ... + \frac{FP}{(1+i)^n}$
- Coupon Bond $P = \frac{C}{1+i} + \frac{C}{(1+i)^2} + \frac{C}{(1+i)^3} + ... + \frac{C}{(1+i)^n} + \frac{F}{(1+i)^n}$
  - When the coupon bond is priced at its face value, the yield to maturity equals the coupon rate
  - The price of a coupon bond and the yield to maturity are negatively related; that is, as the yield to maturity rises, the price of the bond falls. As the yield to maturity falls, the price of the bond rises.
  - the yield to maturity is greater than the coupon rate whne the bond price is below its face value
- One special case of a coupon bond is called a consol or a perpetuity, for a consol or perpetuity $P_c = \frac{C}{i_c}$
- Discounted Coupon: $i = \frac{F-P}{P}$

2.4 The distinction between interest rates and returns

The return on a bond is the current yield i_c plus the rate of capital gain g: $R = \frac{C}{P_t} + \frac{P_{t+1}-P_t}{P_t} = i_c + g$

where R is the retun on a bond held from time t to time$t+1$, C is the coupon payment, i_c is the current yield(the coupon payment over the purchase price), $g = \frac{P_{t+1}-P_t}{P_t}$ is the rate of capital gain (or the change in the bond's price relative to the initial purchase price).

Returns will differ from the interest rate, especially if the price of the bond experiences sizable fluctuations that produce substantial capital gains or losses.

2.5 Maturity and the Volatility of Bond returns: Interset-Rate Risk

Prices and returns for long-term bonds are more volatile than those for shorter-term bonds.

2.6 The Distinction Between the Real and Nominal Interest Rates

Fisher equation $i = r + \pi^e$

when the real interest rate is low, there are greater incentives to borrow and fewer incentives to lend

2.7 Some Useful Formulas

Geometric summation:

(a) $1 + r + r^2 + r^3 + ... + r^n = \frac{1-r^{n+1}}{1-r}$, when $-1 < r < 1$.

(b) $1 + r + r^2 + r^3 + ... + r^n + ... = \frac{1}{1-r}$, when $-1 < r < r$.

3 Exercises

- **[Q1]** (2010 Fall Q46) Economists group commercial banks, savings, and loan associations, credit unions, mutual funds, mutual savings banks insurance companies, pension funds, and finance companies together under the heading financial intermediaries. Financial intermediaries
  - A) provide a channel for linking those who want to save with those who want to invest.
  - B) hold very little of the average American's wealth.
  - C) can hurt the performance of the economy.
  - D) produce nothing of value and are therefore a drain on society's resources.

- **[Q2]**(2010 Fall Q8) Markets in which funds are transferred from those who have excess funds available to those who have a shortage of available funds are called
  - A) derivative exchange markets.
  - B) commodity markets.
  - C) financial markets.
  - D) fund-available markets.

- **[Q3]** (2010 Spring Q15) A financial market in which previously issued securites can be resold is called a —— market.
  - A) primary
  - B) used securities
  - C) tertiary
  - D) secondary

- **[Q4]** (2010 Fall Q19/2010, Spring Q45) Which of the following instruments are traded in a capital market?
  - A) U.S. Treasury bills.
  - B) Banker's acceptances.
  - C) Repurchase agreements.
  - D) Corporate bonds.

- **[Q5]** (2010 Fall Q30) Forty or so dealers establish a "market" in these securities by standing ready to buy and sell them.
  A) U.S. government bonds
  B) Common stocks
  C) Secondary Stocks
  D) Surplus stocks

- **[Q6]** (2010 Fall Q11) The converson of a barter economy to one that uses money
  A) does not increase economic efficiency.
  B) increases efficiency by reducing the need to exchange goods and services.
  C) increases efficiency by reducing the need to specialize.
  D) increase efficiency by reducing transactions costs.

- **[Q7]** (2010 Fall Q16) Kevin purchasing concert tickets with his debit card is an example of the —— function of money.
  A) store of value
  B) specialization
  C) medium of exchange
  D) unit of account

- **[Q8]** (2010 Fall Q27) In a barter economy the number of prices in an economy with N goods is
  A) 2N
  B) N(N/2)
  C) [N(N-1)]/2
  D) N(N/2)-1

- **[Q9])** What is the monthly loan payment, for a 30-year home loan, if $i = 6.5\%$ and you would like to borrow $500,000?

- **[Q10]** Assume you can afford to pay $1000 per month for housing expense. You would like to take out a 15 year home loan (mortgage) when $i = 8\%$. How much could you afford to borrow from a bank?

- **[Q11]** The return on a 5 percent coupon bond that initially sells for $1000 and sells for $950 next year is
  A) -5 percent.
  B) 5 percent.
  C) 0 percent.
  D) -10 percent.

- **[Q12]** Sara decides to lend Tom $100 for 3 years at 6% interest rate with all interest and principal due at the end of the 3rd year. What is the total amount Tom must pay Sara 3 years into the future?
  A) $119.10
  B) $118.21
  C) $106.18
  D) $125.66

- **[Q13]** Tom would like to borrow $500 from Sara today. In return, Tom has agreed to pay Sara $75 forever, but will never pay back the $500. (Assume they both live forever) What is Sara's yield to maturity?
  A) 15%
  B) 18%
  C) 13%
  D) 12.5

- **[Q14]** Which of the following $1000 face-value securities has the highest yield to maturity?
  A) A 5 percent coupon bond with a price of $600.
  B) A 5 percent coupon bond with a price of $800.
  C) A 5 percent coupon bond with a price of $1000.
  D) A 5 percent coupon bond with a price of $1200.