

Econ 353 Money, Banking, and Financial Institutions  
Spring 2006

Midterm Exam 2

Name \_\_\_\_\_

- The duration of the exam is 1 hour 20 minutes.
- The exam consists of 10 problems and it is worth 100 points.
- Please write in the space provided. If necessary, write on the back of the page.
- Please ask me if you have any questions.
- To receive full credit you have to carefully explain all your answers and show all your work.

General advice: *If you get stuck in the early parts of a problem, do not stop there. You can receive substantial partial credit by explaining how you would solve the rest of problem if you had the necessary answers from its previous parts.*

1. (20 points) Determine whether each of the statements below is True or False:

The price of the futures contract at its expiration is equal to the price of the underlying asset because of arbitrage.

Option buyer would never exercise a call option which is out of the money.

A *call option* is said to be *in the money* if the price of the underlying asset is lower than the strike price.

An investor with the long position in the bond futures market is hoping for higher interest rates in the future.

Bond market is less important than stock market in most developed countries.

Price of an interest rate futures contract can't fluctuate significantly from the price of the underlying bond before the futures expiration date.



5. (10 points) What are the two main elements of the price of an option and explain what each of them means?

6. (5 points) Suppose that company A paid a \$2 dividend on each of its stocks. Assume that the growth rate of dividends is 4% a year. The risk-free interest rate is 2% and the risk premium is 4%. What is the current price of one stock of the company A?

7. (10 points) Show on a T-account the following transactions:

- a. A customer withdraws \$1000 from a checking account.

- b. Bank sells \$1000 worth of T-Bills to increase the amount of reserves.

c. Bank gives \$1000 worth of loans using its excess reserves.

8. (10 points) Many banks choose to hold excess reserves. Explain the benefits and costs of holding excess reserves.

9. (10 points) Describe the asymmetric information problems that a bank faces when considering a loan application from a firm? How can a bank attempt to solve these problems?

10. (20 points) Suppose that a bank has \$50 million in assets the interest rate on which is equal to the current rate on 1-year Treasury Bills plus 4%. The interest rate on the remaining \$80 million in assets is fixed and is equal to 8%. The bank pays the interest rate equal to the rate on 1-year T-Bill rate plus 1% on \$100 million of its liabilities. It pays a fixed rate of 5% on the remaining \$30 million of its liabilities. The current T-Bill interest rate is 4%.

a. Carefully describe the nature of the risk this bank faces because of the mismatch of the interest rate sensitive assets and liabilities?

b. Define and calculate the gap?

c. Suppose that the interest rate on assets falls to 7% and the interest rate on liabilities falls to 4%, what is the change in profits of this bank?

- d. Imagine that there is a finance company that has \$60 million in rate sensitive assets and \$10 million in rate sensitive liabilities. Describe a swap contract that would allow both bank and finance company to get rid of the risk associated with the mismatch of the interest-rate sensitive assets and liabilities?