

Midterm Exam

*Directions: Answer all questions; the questions are weighted equally. For full credit, you must provide **complete** explanations for your answers.*

1. Describe the position one would take in the financial futures markets in order to hedge the interest rate risk implied by the following scenarios:
 - (a) Chicago Bank has \$100 million in assets and \$83 million in liabilities. The duration of its assets is 5.9 years and the duration of its liabilities is 1.8 years.
 - (b) A bank issues a \$3 million fully amortized mortgage requiring monthly payments. The bank plans to sell the mortgage in 6 months.
 - (c) A savings and loan has a negative funding gap.
2. A bank has two 3-year commercial loans with a present value of \$70 million. The first is a \$30 million loan that requires a single payment of \$37.8 million in three years, with no payments until then. The second loan is for \$40 million. It requires an annual interest payment of \$3.6 million. The principal of \$40 million is due in three years.
 - (a) What is the duration of the bank's commercial loan portfolio?
 - (b) What will happen to the value of its portfolio if the general level of interest rates increases from 8% to 8.5%?
3. Suppose IBM can borrow long term at a fixed rate of 7% or at a floating rate of 30 bp over LIBOR. Wells Fargo can borrow long term at a fixed rate of 10% and a floating rate of 65bp over LIBOR. Design an interest rate swap that reduces the borrowing costs of both firms.
4. Define the following measures and describe the information they provide about bank performance: *NII*, *NIM*, *ROE*, and *ROA*.
5. A lender forecasts inflation to be 4% over the upcoming year, 2% in following year, and 5% in the year after that. If she wants a real return of 3% every year, determine the term structure of bonds with maturities of 1, 2, and 3 years implied by the expectations hypothesis and the Fisher relation.
6. In Brunnermeier's analysis of the credit crisis, the TED spread played a critical role. Why?