SUNY-Binghamton **Name** _____
Spring 2026

Economics 450
Monetary Economics
Second midterm exam

No calculators. Total points on exam: 130**.** Good luck! Look over the entire exam before you begin.

1) A bank has taken $10m in deposits and borrowed $2m by issuing bills. It holds $2m in cash and $6m worth of long-term Treasury bonds. It has made $8m in loans to local businesses.

a) 5 pts. What is the bank's capital? $_____

b) 5 pts How much does the bank have in "secondary reserves"? $_____

2) 10 pts. What are Bagehot's rules? I mean specifically, how many rules are there, and what are those rules?

3) 10 pts. Fannie Mae and Freddie Mac will not buy a mortgage unless the mortgage satisfies certain requirements which make it a "conforming" or "prime" mortgage. List two of the requirements.

4) Consider an economy with no banks. A person faces a situation similar to, but not exactly the same as that described by the Baumol-Tobin model. As in that model,

Y is annual real income received at the beginning of the year

i is the annual return to holding bonds, paid at the end of the year.

N is the number of financial transactions the person engages in.

$M/P = \frac{Y}{2N}$ is the average money balance if the person engages in N financial transactions.

F is the time-and-trouble cost of one financial transaction.

In this economy, however, *money pays interest* at an annual interest rate $\hat{i}$. $\hat{i}$ is less than i.

a) 10 pts. Derive an equation that shows the average real money balance a person will hold. SHOW ALL STEPS.

4) continued.

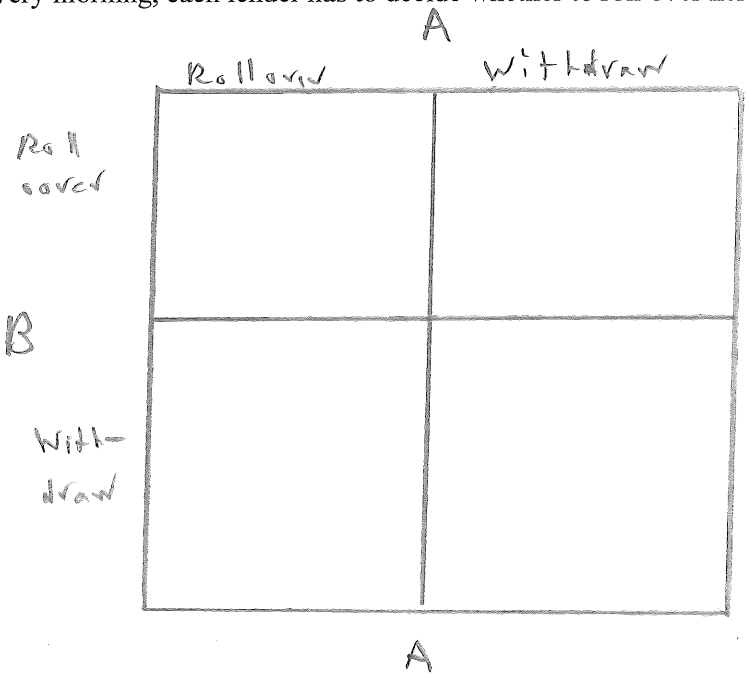
b) 10 pts. Suppose everyone in the economy is exactly like the person in a). What happens to i, the annual return on bonds, if there is *no* change in the money supply or the price level, but there is an *increase* in $\hat{i}$ (the rate of interest paid on money)? Make sure your answer is consistent with your answer to a), and **draw a graph to illustrate your answer.**

c) 10 pts. Let X denote the supply of real money balance per person, that is $X = (M / P)^S$. Starting from your answer to a), derive an equation that gives the equilibrium value of i in this economy (alone on the left-hand side of the equation) as a function of X, Y, F and $\hat{i}$ (all on the right-hand side of the equation). SHOW ALL STEPS.

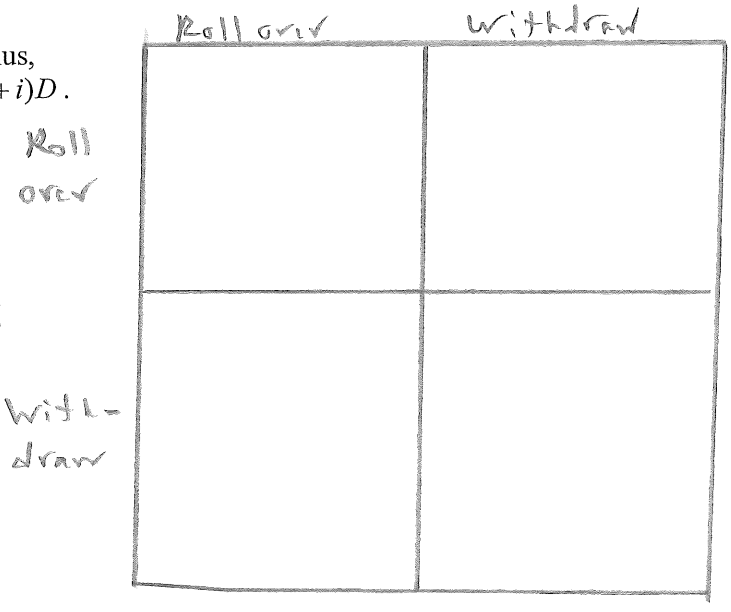
5) 10 pts. What are "liquidity requirements"?

6) A financial intermediary (FI) has been borrowing overnight, from just two lenders, to fund purchases of relatively liquid bonds. Each lender has been lending $\$D$ to the FI. Every morning, each lender has to decide whether to roll over her loan to the FI, or to withdraw her loan.

a) 10 pts. Suppose that, if both lenders to the FI choose to roll over, the FI remains in business and will repay both lenders with interest: each lender will receive $(1+i)D$. If either or both of the lenders withdraws, the FI must immediately sell its bonds at low prices. In that case, each lender receives a fraction z of the money that is owed her, where z is less than one. That is to say, if one withdraws and the other doesn't, the lender who withdraws gets zD; the lender who rolls over gets $z(1+i)D$. If both withdraw, each gets zD. In each of the four segments of the box, list what is received by "lender A" and "lender B." Circle the segment(s) of the box that is (are) an equilibrium.



b) 10 pts. Now suppose that the lenders to the FI have insurance policies that will pay off their loans to the FI should the FI default on the loans. Thus, if both lenders roll over, each lender will receive $(1+i)D$. If one withdraws and the other doesn't, the lender who withdraws gets D; the lender who rolls over gets $(1+i)D$. If both withdraw, each gets D. In each of the four segments of the box, list what is received by "lender A" and "lender B." Circle the segment(s) of the box that is (are) an equilibrium.



7) 10 pts. In the early 2000s money market mutual funds did not have access to a lender of last resort (the Fed would not lend to them). Nor were their "deposits" (shares) insured by the FDIC. Yet people did not worry that money market mutual funds could be subject to liquidity crises or become insolvent due to interest-rate risk. Why not?

8) 10 pts. Suppose that Chemung Canal Bank made a big profit in the year 1845, back before there were regulatory capital requirements or deposit insurance. Some of the owners of the bank wanted to pay out all of the profit to the owners in dividends. Other owners wanted to use the profit to buy more bonds and make more loans to be held by the bank, increasing the bank's capital. What would have been the possible benefit to the owners of increasing the bank's capital?

9) Last Friday there was an article in the New York Times under the title "Banking Regulators Prepare to Loosen Post-Crisis Capital Rules." Here is a quote from it: *Federal banking regulators released a long-awaited proposal on Thursday that would reduce capital requirements on large and regional banks....Critics fear the changes could increase systemic risk in the banking sector....Banks have for years lobbied to have requirements loosened....*

a) 10 pts. Why might people "*fear the changes could increase systemic risk in the banking sector*"?

b) 10 pts. Why would banks lobby to have capital requirements reduced? Hint: for full credit, you must use a particular equation from the coursepack which is relevant here.