SUNY-Binghamton	Name	2
Spring 2025	Economics 450 Monetary Economics	
	Second midterm exam	
No calculators. Total points	on exam: 180. Look over the entire exam	before you begin. If I ask you to explain your
answer, your grade for the q	uestion will depend on your explanation. If	you need more room for an answer, write on the
back of the exam. Good luck	c!	
1) Consider a financial inter- portfolio of long-term Treas- maturity to get a rate of retur- year, Bob pays out all the fin from the firm's accounts for	nediary called "Bob's Financial Company. Iry bonds, receiving the coupon payments in. It also holds some cash money in a vaul m's profit to himself and uses the money to this year.	" This business borrows funds overnight. It holds a on the bonds and occasionally selling bonds before t. There is one owner of the firm - Bob. Every o live it up in Los Vegas. Here are some numbers
Current market valu	e of Treasury bonds held by the firm	\$150m
A 4	C 1	¢100

Current market value of freasury bonds neid by the min	\$150m
Amount of money the firm has taken in overnight borrowing	g \$100m
Amount of cash held in the firm's vault	\$10m
Average annual interest rate the firm pays on its overnight lo	oans 5 percent
Average annual return on the firm's bond portfolio	10 percent

a) 5 pts. What is the firm's "net worth"? \$\_\_\_\_\_

b) 5 pts. What is the firm's "capital"? \$\_\_\_\_\_

c) 5 pts. What is the value of the firm's "reserves"? \$\_\_\_\_\_

d) 5 pts. What is the value of the firm's "secondary reserves"? \$\_\_\_\_\_

e) 10 pts. The total value of the firm's assets is greater than the amount of money it has borrowed. How can that be?

f) 10 pts. What is Bob's annual income from the firm this year, expressed as a fraction of his investment in the firm? (Note I said fraction, not percent.)

## 1) continued

g) 10 pts. Are there any circumstances under which this firm could, in the future, become bankrupt due to a "run"? If your answer is "no," explain why not. If your answer is "yes," why and how.

2) 20 pts. In the context of financial markets, what is "contagion"? How can it occur?

3) Consider an economy with no banks and no central bank. A person faces a situation similar to that described by the standard Baumol-Tobin model. As in that model,

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

*i* is the annual interest rate or bond yield (expressed as a fraction, as in class)

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

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

Here, however, the cost of engaging in financial transactions is different. The cost of engaging in a financial transaction increases with the number of transactions a person has already done - the more transactions, the more annoying is the next transation. Thus, the *total cost* of engaging in N financial transactions is not FN. The total cost of engaging in N financial transactions is  $FN^2$ .

a) 30 pts. Derive the average real money balance that a person will choose to hold.

## 3) cont.

b) 10 pts. Suppose the supply of real money balances is held fixed, while there is an *increase* in the parameter F. What happens to the economy's market-clearing interest rate? Explain how you know, in terms of your answer to a).

4) 20 pts. What are "Bagehot's rules"?

5)

a) 15 pts. Hanna borrows \$200 from Bill, promising to pay him his money back whenever he asks for it, with interest *i*.

She borrows another \$200 from Jane on the same terms. Hanna takes the \$400 and buys one illiquid coupon bond.

- If Bill and Jane roll over (do not withdraw) their loans, Hanna will pay each one back the \$200 plus interest earned.

- If both Bill and Jane withdraw their loans, Hanna will sell the bond immediately for a low price, just \$200, and divide up the \$200 equally between Bill and Jane - each will receive \$100.

- If one withdraws and the other rolls over, Hanna will sell the illiquid bond and gives the one who withdrew \$100. Hanna will take the remaining \$100, invest it in very short-term Treasury bills, and pay the person who rolled over the loan \$100 plus interest j, where j is less than i.

Portray this situation in the boxes to the right. Circle all of the outcomes that can be an equilbrium, as we defined equilibrium in class.

b) 15 pts. Now suppose that, as above, Hanna borrows \$200 from Bill, promising to pay him his money back whenever he asks for it, with interest *i*. She borrows another \$200 from Jane on the same terms. Hanna takes the \$400 and buys one illiquid coupon bond. But the possible outcomes are a bit different.

- If Bill and Jane roll over (do not withdraw) their loans, Hanna will pay each one back the \$200 plus interest.

- If both withdraw their loans, Hanna will sell the bond immediately for a low price, just \$200, and divide up the \$200 equally between Bill and Jane - each will receive \$100.

- If one lender withdraws and the other rolls over, the bond will be sold as quickly as possible for the price of \$200. The \$200 will be divided evenly between Bill and Jane. There will *also* be a difficult case in bankruptcy court. The case will cost *both* lenders - Bill and Jane - \$5 in lawyers' fees (\$5 each). And neither will earn any interest.

Portray this situation in the boxes to the right. Circle all of the outcomes that can be an equilbrium, as we defined equilibrium in class. 6) 10 pts. In the context of a "credit default swap," what is "counterparty risk"?

7) 10 pts. In the context of repurchase agreements (repos), what is a "haircut"?