Professor Robert A. Miller
Carnegie Mellon University
Trade and Investment Strategy
45-871 M2 2026

ASSIGNMENT 1

You may submit a group assignment of up to 3 but no more than 3 in the group will be permitted. (Split groups of 4 into 2 groups of 2.) I have no problem with more than 3 people churning over ideas in the initial discussion of the assignment, but each group should submit one distinct assignment. Please submit a pdf or a word document. Scanned handwritten diagrams are also fine providing they are neat.

Question 1 (5 points)

Explaining the bidding behavior of the banks

The figures in the first class show that roughly speaking banks make bidding forays at different times. If they have not previously bid (or are OUT), when they (re)enter the bidding, they raise the interest rate offer by small increments until they either stop altogether or hit ONM; then they jump and end their foray. Later in the auction, they might reenter if they are pushed OUT because the ONM rate has risen in the meantime:

1. Why do they creep up to ONM from OUT?
2. Why do they jump off the ONM to INM?
3. At the 15-minute mark suppose that after creeping upwards to the ONM rate, your value from winning a bid at the current ONM rate exceeds the current ONM rate. Should you bid now or wait for another possible bidding opportunity?
4. Alternatively suppose that as you creep up towards the ONM rate, your creeping bid is about to exceed your valuation before you cross the ONM rate. What should you do now?

Question 2 (5 points)

No time limit on the auction, and bankers give all their attention the how the auction proceeds.

Now let us consider a slightly different auction format and different conditions:

1. The auction ends when no further bids are received within a 5 second time elapse. In other words, if another bid is not received within 5 seconds of the most recent bid, the auction ends, and the CDs are allocated in the same way. This implies the auction might end before or after 30 minutes.
2. All the banks (bidders) pay scrupulous attention to how the auction proceeds. (Perhaps they employ a person or a computer to specialize in this task.) However, this takes up their valuable time; they return to some other task once the auction is over.

As a way of thinking about this new format and discussing it within your own group, you might want to pretend to play such an auction amongst yourselves. Then answer the following questions. First suppose you are a bank.

1. Should you bid if your valuation is higher than the ONM?
2. How much higher than the ONM rate should you bid? Explain your reasoning.
3. Should you bid if your valuation is lower than the ONM rate?

Compared with the current setup, and explaining your reasoning, do you think:

4. more money or less money be left on the table if this new modified setup is implemented?
5. bankers with the highest valuations are more likely to win the auction?
6. the modified auction would be more efficient at allocating the CDs the highest-values-in-use than the setup?

Question 3 (5 points)

A two-stage auction

Consider the following mechanism for a two-stage auction. There are initially twenty bidders competing for one object. In the first stage each bidder indicates a minimum amount they are willing to pay for the auctioned item by submitting a minimum bid that only the auctioneer sees. The auctioneer then selects the top three bidders and announces the minimum bid of the fourth highest bidder. The bidders never see the bids of their other rivals from the first stage. Each bidder knows how much they value the auction item. The three bidders are invited to submit a final bid in a sealed first price auction, in which they must bid an amount at least the minimum amount the auctioneer announced but do not have to bid higher than that. This

means that each of the top three selected contenders can submit a lower amount final bid than his or her first bid providing the final bid meets the threshold the auctioneer has announced:

1. What should you bid in the first stage?
2. How should you calculate what to bid in the second stage if you are one of the top three bidders?