

**1.7 Bargaining problems**

1. Bergstrom and Miller Warm-up questions  
14.1-14.9;

Answers:

14.1 \$1 if accept; \$0 if reject  $\Rightarrow$  accept

14.2 none

14.3 \$60, \$60 – counteroffer

14.4 \$60 – \$50 = \$10, \$0  $\Rightarrow$  accept

14.5 \$59 gives buyer a profit of \$1, which is better than nothing.

14.6 reject; \$1, \$59

14.7 \$60 won't be rejected

14.8 \$100 – P; \$60 – counter; 36 – second offer

14.9 \$60 – \$50 = \$10; \$36 – \$1 = \$35

2. Bergstrom and Miller Exercises 14.1-14.4  
(See attached table, next page/)
3. Suppose that in the setup of the Bergstrom and Miller exercises, we allow for an infinite number of rounds. What does the Rubinstein theorem predict my initial bid will be?

Answer:

$$\delta_1 = \delta_2 = 0.8 \Rightarrow$$

$$\text{Initial offer is } \frac{1 - \delta_2}{1 - \delta_1 \delta_2} = \frac{1 - 0.8}{1 - 0.8^2} = 0.56$$

I offer \$56

4. In a Cybersettle negotiation, the defendant (the insurance company) enters offers to settle of (at most) 5, 25 and 30. The plaintiff's attorney offers to settle are (at least) 100, 50 and 10. Does the case settle, and if so, at what price?

Answer:

The 1<sup>st</sup> round demands are matched: the plaintiff wants 100, the defendant offers 5 [no overlap]. Then the 2<sup>nd</sup> round demands are matched: 50 demanded, 25 offered [again, no match]. On the 3<sup>rd</sup> round, 10 demanded, 30 offered. So there is room for agreement here.

Normally, the case settles for the average of the demand and offer (20, in this case). But the award is capped at 120% of the amount demanded by the plaintiff, so the case settles for 12.

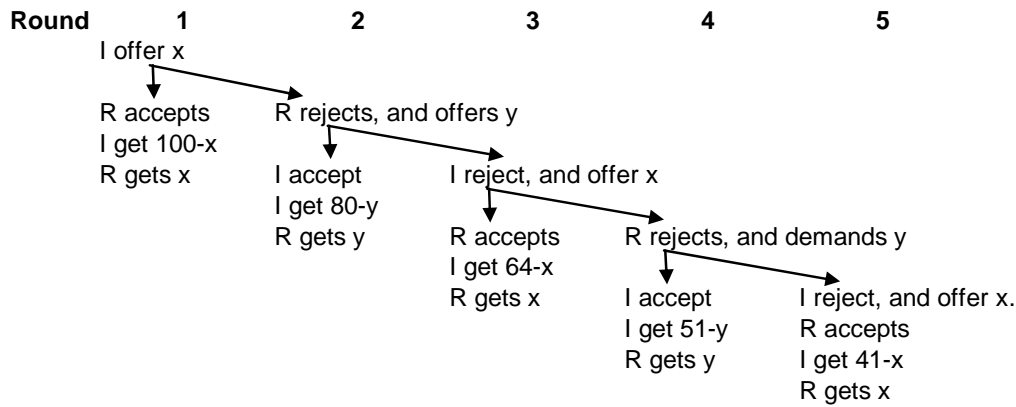
5. In the Kagel, Kim and Moser game, the social surplus is the total monetary value of the chips of both players, converted at their respective exchange rates. Does their Figure 1 offer any evidence for or against the hypothesis that players try to maximize this social surplus?

Answer: To maximize the total monetary value of the chips, they should all go to the person with the highest exchange rate. To see this, suppose that player 1 has an exchange rate of \$0.30; player 2, \$0.10; and that there are 100 chips in total. Consider the following set of outcomes (divisions of the 100 chips):

Outcome	Player 1	Player 2	Total \$
A	100 chips, \$30	0	\$30
B	50 chips, \$15	50 chips, \$5	\$20
C	25 chips, \$7.50	75 chips, \$7.50	\$15

Outcome C is (in dollar terms), the fairest. Outcome B is fair in chips (but unfair in dollars). Outcome A is the least fair, but if the players take the point of view that “it’s worth more to you than to me; you should take it”, they will go for outcome A. In sessions 5 and 6 (of figure 1), we see that the outcomes tend to be between B and C (with no support for A).

**B & M Ch. 14 Exercise: Bargaining against a robot**



**Number of rounds in game**

- 1 I offer  $x=1$ ; R accepts; I get 99.
- 2 To give R 80, I offer  $x=80$ ; R accepts; I get 20. R demands  $y=79$ ; I accept; I get 1.
- 3 To give R 17, I offer  $x=17$ ; R accepts; I get 83. R demands  $y=16$ ; R gets 16. To give me 64, I offer  $x=1$ ; R accepts; I get 63.
- 4 To give R 67, I offer  $x=34$ ; R accepts. To give me 14, R demands  $y=66$ ; I accept. To give R 51, I offer  $x=51$ ; R accepts; I get 13. R demands  $y=50$ ; I accept; I get 1.
- 5 To give R 27, I offer  $x=63$ ; R accepts. I get 63. To give me 54, R demands  $y=26$ ; I accept. To give R 11, I offer  $x=11$ ; R accepts; I get 53. To give me 41, R demands  $y=10$ ; I accept. I get 40.

### 2.21 Auction problems

1. Bergstrom and Miller (in packet) Warm-up exercises 13.1-13.7 (answers in text); Exercises 13.1-13.7 (exercises in text)
2. I'm selling my Dali lithograph by an open-outcry English auction and I'm trying to set a reserve price  $R$ . Consider the highest bid  $H$  and the second highest bid  $SH$ . Ignoring equalities, there are three possibilities: (1)  $R < SH < H$ ; (2)  $SH < R < H$ ; and (3)  $SH < H < R$ . In each of these ranges, how does my reserve price affect the auction outcome? If I know  $H$  and  $SH$ , where would I set  $R$ ?

Answer: With no reserve price, and open outcry auction will stop at  $SH$  (or  $SH+1$  tick). So in case (1), no change. In case (2),  $SH$  will drop out, and  $H$  will continue bidding, eventually claiming the item at a price  $R$  (which is better than  $SH$ ). In case (3), the reserve price is never met (the item doesn't sell). As the seller, I want to get the highest price. This will occur when I set  $R$  to the highest value ( $H$ ) less one tick (to avoid making the buyer completely indifferent to winning).

3. As the seller in a sealed-bid first-price auction, is there any advantage to specifying a reserve price *lower* than your honest reservation price?

Answer: No. There is a cost. In this case, the high bid might be above the reserve price, but below my reservation price. I'll make a sale that I'd prefer not to make.

4. Assume that the setup is an independent private-values descending-price Dutch auction with identical bidders. My aunt Florence can't be at present, so I'll be representing her in the bidding for a Tiffany lamp. I ask:
  - (a) "If this were an English auction, what's the highest you'd bid?"  
Aunt Florence: "\$800"
  - (b) "If this were a second-price sealed-bid auction, what would you bid?"  
Aunt Florence: "\$850"
  - (c) "If this were a first-price sealed-bid auction, what would you bid?"  
Aunt Florence: "\$750"

Are Aunt Florence's response consistent? Which answer should come closest to AF's true value for the lamp? Which answer should come closest to the price at which (in the actual auction) I should claim the lamp?

Answer: It is inconsistent that AF would drop out of an English auction at \$800, but would bid \$850 in a second-price auction. (With private values, the two are strategically equivalent.) Furthermore, the first-price and Dutch auctions are strategically equivalent, so in the Dutch auction, I'll call "Mine" at \$750.

5. Buyers on eBay can use a proxy bidder. To do so, they set a maximum price. The proxy bidder keeps bidding just high enough to be the best bid (up to where the maximum price is hit). It has been stated that the proxy bidder transforms the format of eBay's English auction. In what sense is this true?

Answer: If proxy bidders are bidding against each other, the winning bid will be the second-highest pre-set max price, just like in a second-price auction.

6. On the eBay web site it is stated, “We will thoroughly investigate bid retractions, and abuse of this feature may result in the suspension of your eBay account.” Why does eBay take such a hard line on retractions?

Answer: see notes on bid shielding manipulation.

7. On the eBay web site, it is stated, “eBay originally allowed sellers to bid on their own auctions as a way to close their auction without selling to the highest bidder.” This is no longer allowed. Why not?

Answer: see notes on shilling manipulation.