

Instructions

Welcome! This is an experiment in economics. Funding for this experiment has been provided by the National Science Foundation and Virginia Commonwealth University.

For today's session, you will receive a \$6 show-up fee. In addition, you will have the opportunity to earn money during the session. Your decisions are likely to considerably affect your earnings. If you follow the instructions and make good decisions, you can earn more money.

Caution: Talking or looking at others' screens is not allowed. Should you have any questions please raise your hand and an experimenter will come to you.

A. Overview. Today's session involves making production decisions for others. At the beginning of the session you will be matched with other four participants in this room. The participants are labeled *a#*, *b#*, *c#* or *d#*. Where the # sign indicates a group number, 1 to 4. You will remain matched with these same people throughout the first portion of this session. The first part of this session consists of a series of 10 *periods*. In each period you and the other participants in your group will make costly *production decisions* that affect another player's earnings.

1. Period Structure: At the beginning of each period, the participants in your group will be randomly ordered 1st through 4th in sequence. Periods will consist of three *stages*. Following the third stage the period ends, earnings are calculated and the next period begins.

2. Production Decision: In each stage the 2nd, 3rd, or 4th player makes a production decision for the player that precedes her in sequence. In stage 1, for example, the 2nd player decides whether or not to produce a unit for the 1st player, etc. The 1st player in sequence makes no production decision.

3. Tokens. In a period's first stage, the 1st player in sequence is endowed with a *token*. The token has no value and can be offered to the next player if the next player produces a unit. In stage 1, for example, the 1st player can offer to pass the token to the 2nd if the 2nd player produces a unit for the 1st, etc.

4. Earnings: To repeat, tokens have no value. Rather your earnings come from points. If a producer decides to produce a unit, it costs her 1 point. The preceding player, who consumes the unit, earns 3 points. For example, if in stage 2, the 3rd player decides to produce she incurs a cost of 1 point and the 2nd player earns 3 points by consuming the good. If 3rd player decides to not produce, she incurs a cost of 0 points, and 2nd player earns 0 points from consumption.

5. Some observations:

a) The 1st player in sequence makes no production decision, and will know her order in sequence.

b) 2nd, 3rd, and 4th players will also know their position in sequence when they make production decisions, as well as whether or not they were offered a token.

c) If a player is offered a token by the 2nd or 3rd player, she can infer that the preceding player has previously produced a unit for another player, since only the 1st player is endowed with a token.

d) The 4th (last) player in sequence will have no opportunity to consume a good produced by a subsequent player.

e) Each period players have a 1/4 chance of being 1st, 2nd, 3rd, or 4th.

f) In the first part of this session your point earnings from all periods will be summed. The sum will be converted to cash at a rate of \$1 per point. You will earn this in addition to your \$6 appearance fee.

5. Screen Displays and the Sequence of Decisions. Figure 1 illustrates the screen for a participant *b3* at the beginning of period 2. The player is informed that the 2nd Player offered to pass her a token if she will produce. The player is presented with the earnings for possible combinations of own production and consumption decisions. Notice that in this period player *b3* is 3rd in sequence. If the player is the 1st in sequence she will see only the first two lines because she does not produce. If the player is 4th in sequence, there is no one who will produce for her, thus she will see only the last two lines that describe earnings without consumption.

Player	<i>b3</i>		
Period 2	Order in Sequence	<div style="border: 1px solid black; padding: 2px;">3rd</div>	
The 2nd Player Offers you a Token if you Produce			
Earnings Possibilities			
If you consume but don't produce			3 points
If you consume and produce			2 points
If you don't consume and don't produce			0 points
If you don't consume but produce			-1 point
Notes: the 1st player CANNOT produce. The 4th Player CANNOT consume.			
Decisions			
Produce?		<input type="radio"/>	Yes
		<input type="radio"/>	No
Offer Token to 4th Player if she Produces?		<input type="radio"/>	Yes
		<input type="radio"/>	No
			Confirm

Figure 1. Screen Display at the Beginning of a Period.

Player *b3* must decide whether or not to produce. To make a decision she must click on the radio dial to the left of the ‘Yes’ or ‘No’ headings. If the player is the 1st in sequence she will not see production decision part.

If Player *b3* was passed a token, she must also decide whether or not to offer to pass a token to the 4th player if she will produce. Once the player is comfortable with her decision, she clicks ‘confirm’ to continue.

After all players have completed decisions for the period, results are tabulated and illustrated. Figure 2 illustrates results for a period where *b3* was 3rd in sequence.

Order in Sequence	<div style="border: 1px solid black; padding: 2px;">3rd</div>	
Actions		Earnings
1) Previous player	Offered Token	
2) Your action	Produce	-1 point
3) Next Player's action	Produce	3 points
This Period Earnings		<div style="border: 1px solid black; padding: 2px;">2 points</div>
Cumulative Earnings		<div style="border: 1px solid black; padding: 2px;">4 points</div>
<div style="border: 1px solid black; padding: 2px;">Continue</div>		

Figure 2. Display of Period Results.

In this period, *b3* chose to produce a unit. The 2nd player did pass along the token (indicating that 2nd player produced for the 1st player). Subsequently, the 4th player chose to produce a unit that provides consumption to the 3rd player. As a consequence, player *b3* earned 2 points for the period. The bottom portion of a player's screen displays period

and cumulative earnings. Once the player has reviewed earnings she should press 'continue'.

Questionnaire

Prior to beginning please complete the following questionnaire.

1. Suppose in period 2 you are paired with three other players. In period 3 will you be paired with the same or different players?
2. Suppose in period 3 you were the 3rd in sequence. In period 4 will you be the 3rd in sequence again? What about other players, will they keep their order in sequence?
3. Suppose that in a period you are 4th in sequence and you are offered a token, what can you infer about production decisions of the players who preceded you?
4. In any period what is the chance that you are the 2nd or 3rd player in sequence?
5. If you are 2nd or 3rd, what are your highest and lowest earnings? What should happen for you to earn the highest amount? What should happen for you to earn the lowest amount?
6. In any period what is the chance that you are the 1th or 4th player in sequence?
7. If you are 1st in a sequence, what are your highest and lowest earnings? What should happen for you to earn the highest amount? What should happen for you to earn the lowest amount?
8. If you are 4th in a sequence, what are your highest and lowest earnings? What should happen for you to earn the highest amount? What should happen for you to earn the lowest amount?

Any questions?

Final Period

Overview: In this 11th and final period you will make production and consumption decisions as before with the following two differences

1. *New groups.* Until this moment, you have been paired with a constant group of four players. Now we will place you in a new group. Your new group will consist of people who have never been paired together.
2. *Increased Earnings.* We will *triple* the value of consumption and the cost of production. If a consumption unit is produced for you, you will earn 9 points. If you produce a unit for someone else, it will cost you 3 points.

Following this last period the session will end. The points that you earn in this final period will be converted to U.S. dollars at the rate \$1 per point. These earnings will be added to your appearance fee and your earnings from the first portion of this session.

Any questions?