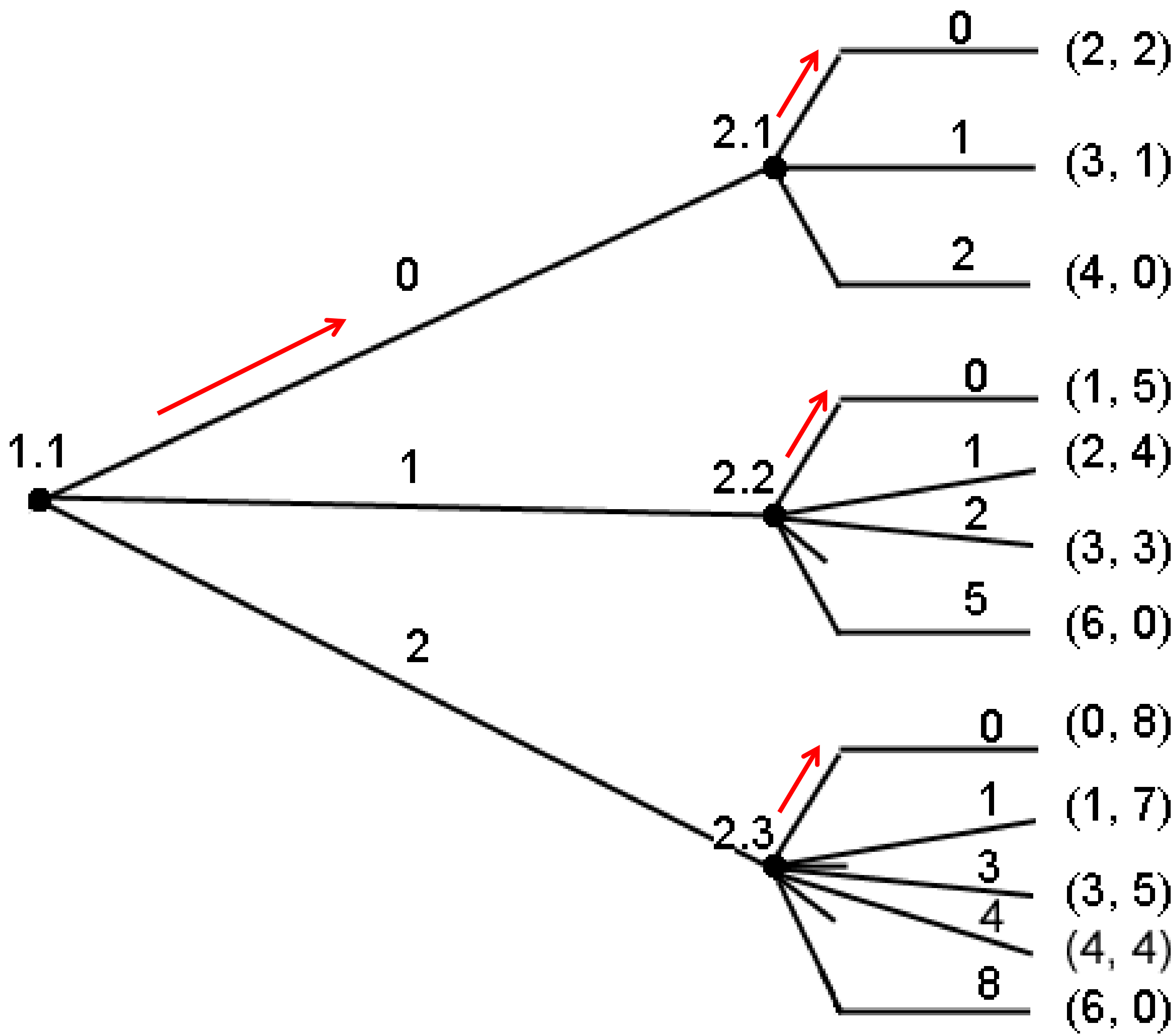
Trust Game

B. Equilibrium:

1. What is the SPE?


1.1
0
1
2
2.1
2.2
2.3
0
1
2
(2, 2)
(3, 1)
(4, 0)
0
1
2
5
(1, 5)
(2, 4)
(3, 3)
(6, 0)
0
1
3
4
8
(0, 8)
(1, 7)
(3, 5)
(4, 4)
(6, 0)

Trust Game

C. Discussion

1. What do you think?
2. Would the results change if we had larger payoffs?
3. Various ways to interpret results
    a. Game theory is wrong.
        1) More than half of the pairs did not behave as predicted.
    b. People are altruistic.
        1) In other words they gave because they value giving.
    c. Game theory is right, but people behave by norms.
        1) Senders might hope that the receiver they are paired with will give back some of the points that are being created.

Trust Game

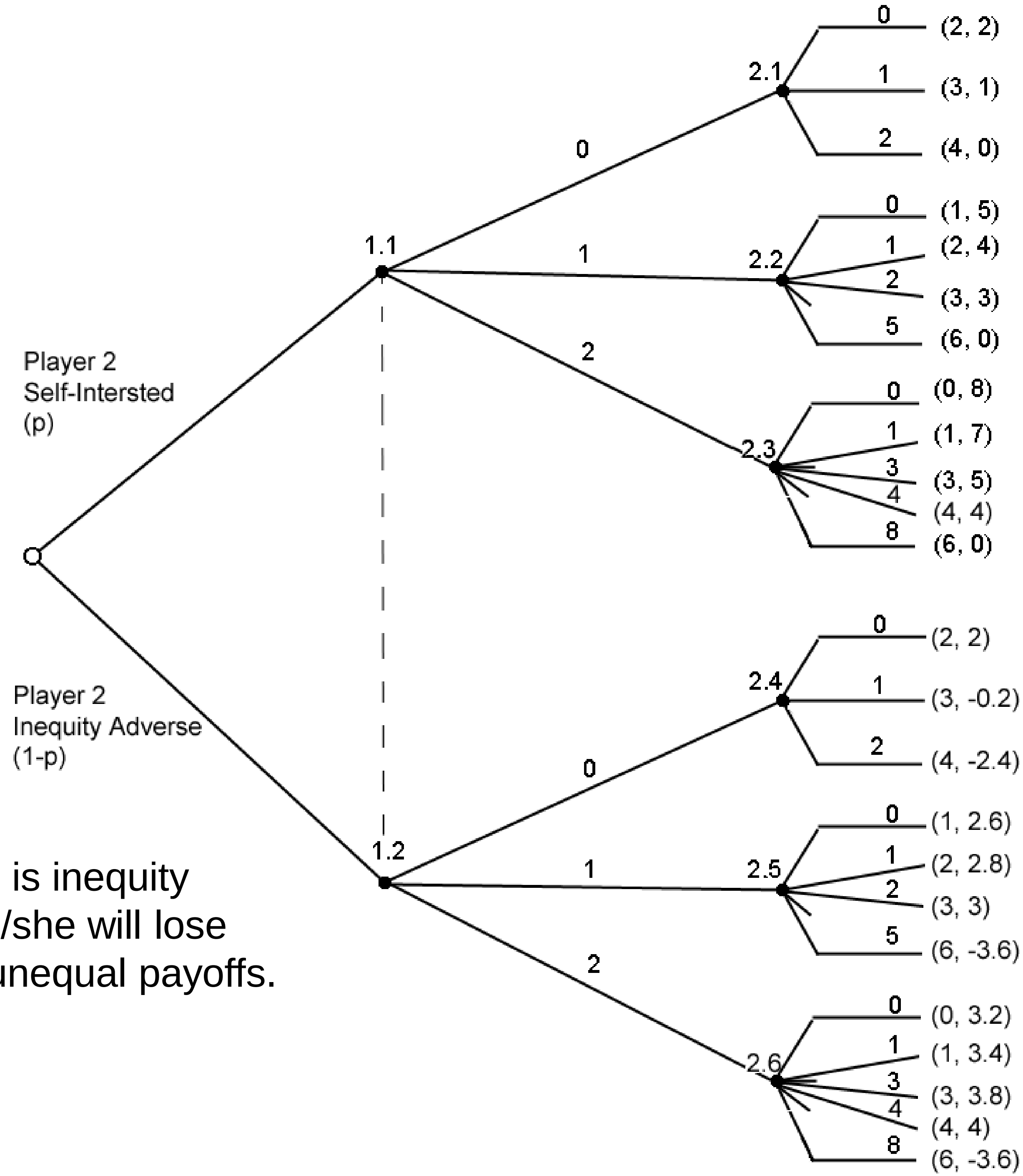
D. Trust game with norms
   1. Norms lead to different equilibria.
   2. Suppose some *receivers* are inequity adverse.

That is:

$$U_i = x_i - \alpha|x_i - x_j|$$

where x_i is the payoff to the receiver,
x_j is the payoff to their sender, and
$0 \leq \alpha < 1$ is a weight on inequity.

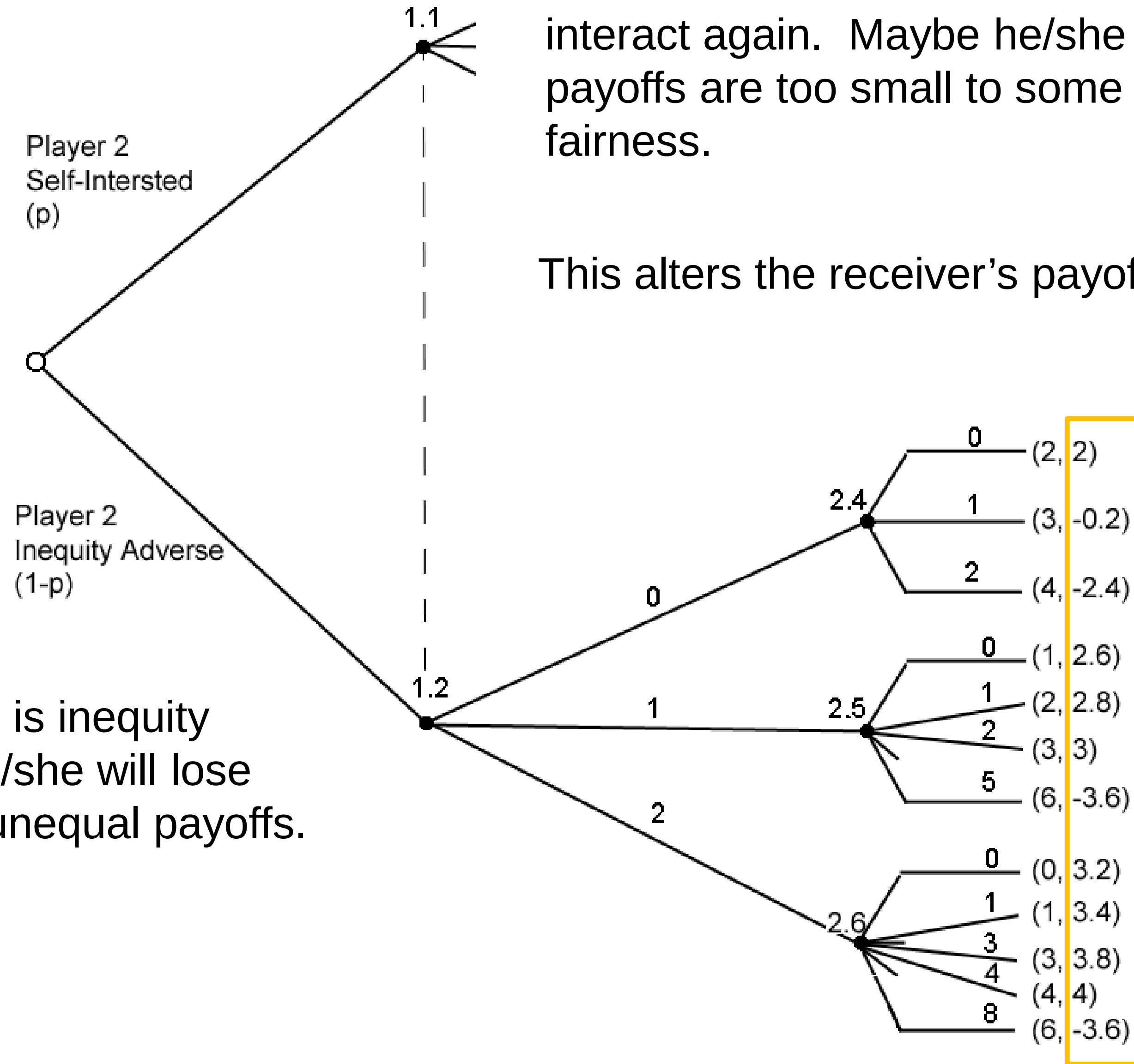
For this example, let's assume $\alpha = 0.6$.



If a receiver is inequity adverse, he/she will lose utility from unequal payoffs.

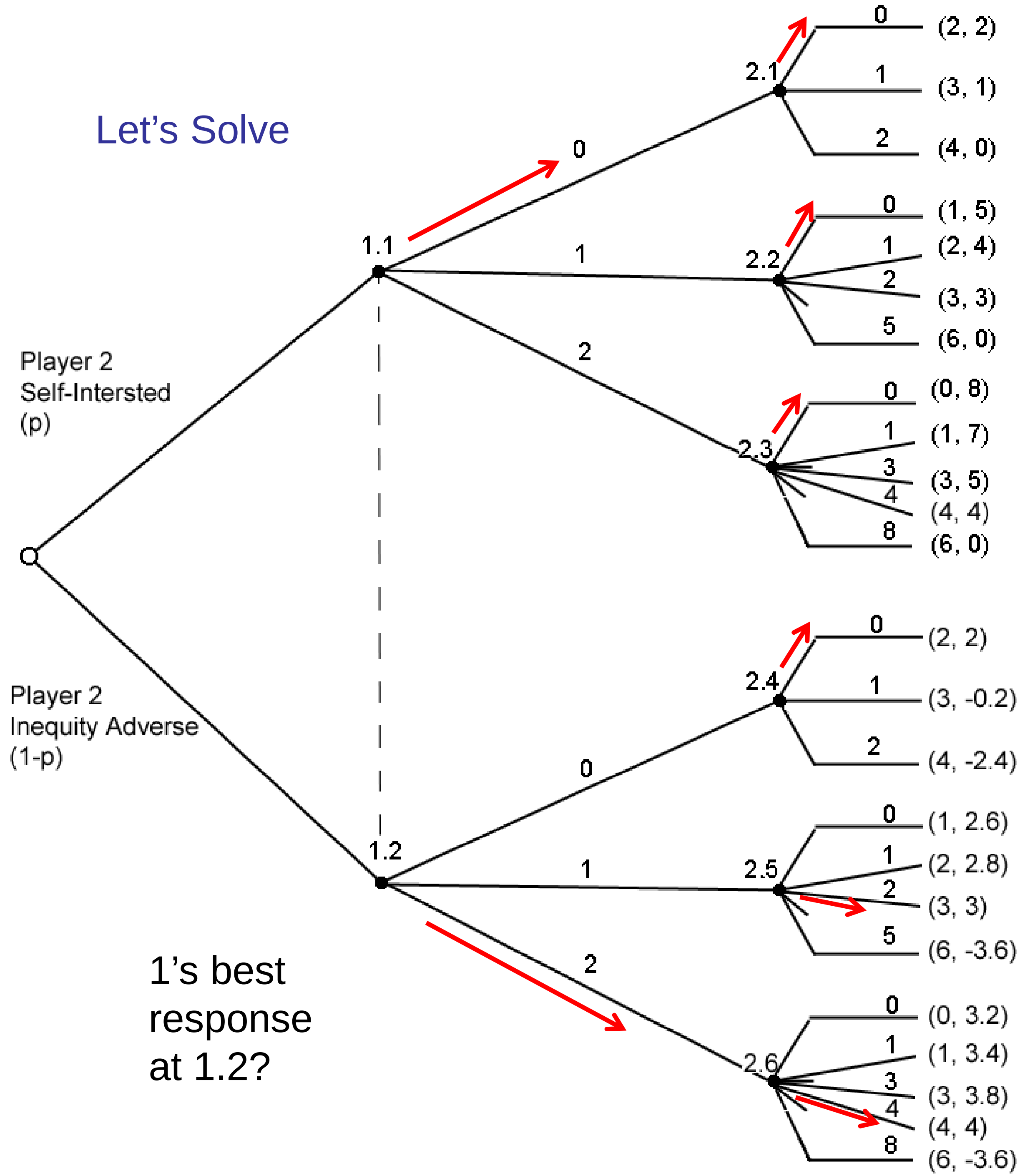
Player 2 gets utility from fair division. Maybe because he/she thinks your identities will be revealed and you will interact again. Maybe he/she thinks the payoffs are too small to some norm for fairness.

This alters the receiver's payoffs here:



If a receiver is inequity adverse, he/she will lose utility from unequal payoffs.

Let’s Solve



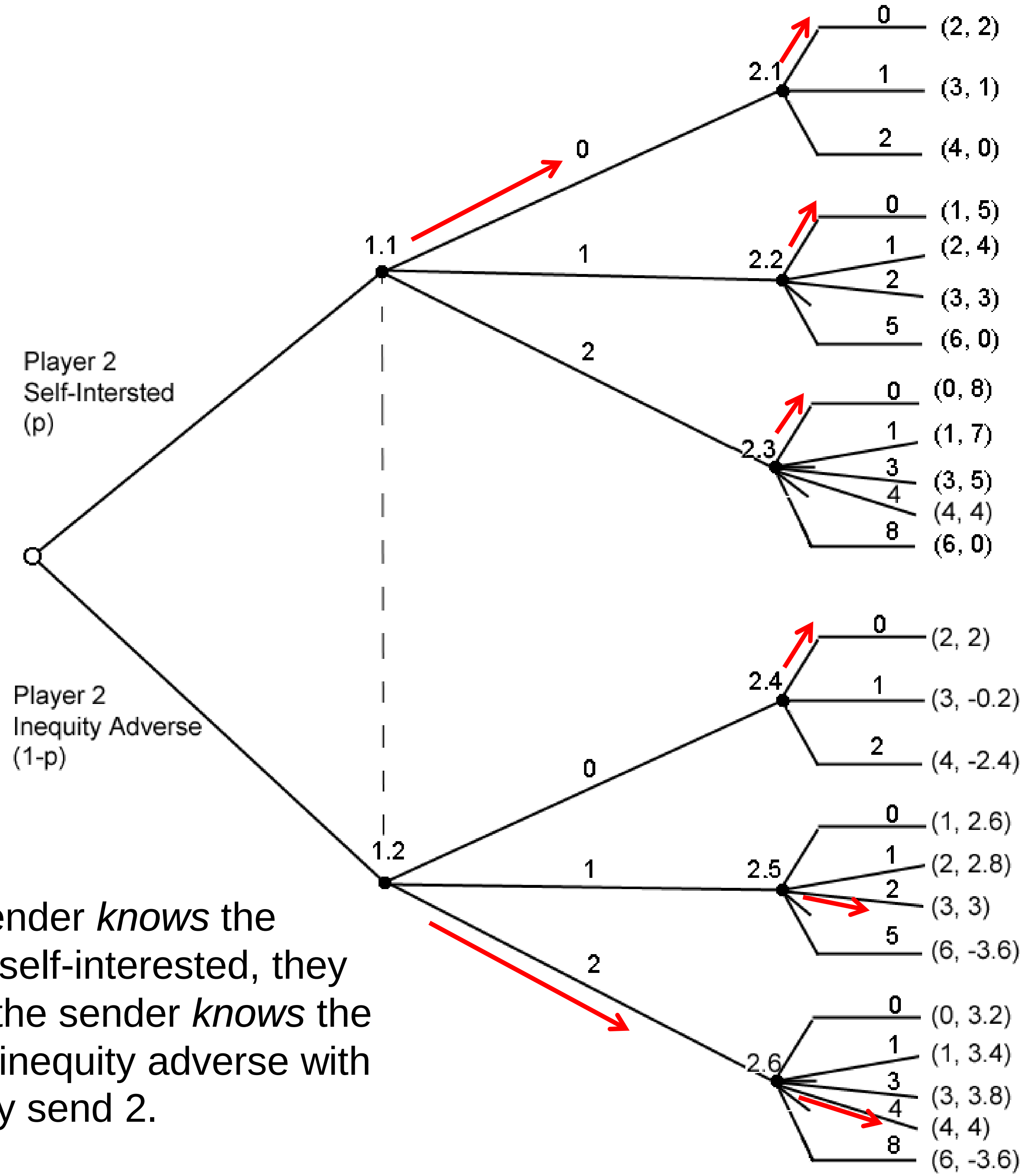
This is what we did before

Best response at 2.4?

Best response at 2.5?

1’s best response at 1.2?

Best response at 2.6?



So if the sender *knows* the receiver is self-interested, they send 0. If the sender *knows* the receiver is inequity adverse with α = 0.6 they send 2.

Trust Game

Player 1:

Action: Payoffs:

A0 = send 0

A1 = send 1

A2 = send 2

Trust Game

Player 1:

Action:	Payoffs:
A0:	$2p + 2(1-p) = 2$
A1:	$1p + 3(1-p) = 3-2p$
A2:	$0p + 4(1-p) = 4-4p$

So now we compare the expected value of each action pairwise (A0 to A1, A1 to A2, etc.).

Trust Game

Player 1:

$EU_1(A1) > EU_1(A2)$ iff:

$$3–2p > 4–4p$$

$$2p > 1$$

$$p > ½$$

Hence, if $p > ½$, then $EU_1(A1) > EU_1(A2)$.

If $p \leq ½$, then $EU_1(A2) \geq EU_1(A1)$.

.

Trust Game

Player 1:

$EU_1(A0) > EU_1(A1)$ iff:

$2 > 3 - 2p$

$2p > 1$

$p > ½$

$EU_1(A0) > EU_1(A2)$ iff:

$2 > 4 - 4p$

$4p > 2$

$p > ½$

If $p > ½$, then $EU_1(A0) > EU_1(A1) > EU_1(A2)$

…send 0.

If $p \leq ½$, then $EU_1(A2) \geq EU_1(A1) \geq EU_1(A0)$

… send 2.

Trust Game

D. Trust game with inequity adversion

1. The sender contributes 2 if he/she thinks the probability the receiver is self-interested is less than 1/2. Otherwise, he/she contributes 0.
2. If $p \leq 1/2$, then

   SE = {send 2; (send back 4| norm), (send back 0| selfish)}.

   If $p \geq 1/2$, then

   SE = {send 0; (send back 0| norm), (send back 0| selfish)}.

   If $p = 1/2$, then

   SE = {send 1; (send back 2| norm), (send back 0| selfish)}.

Trust Game

D. Trust game with norms

3. Of course, the first equilibrium, and the equilibrium probabilities, depend upon α. You could get different answers with smaller α.

Trust Game

E. Discussion
   1. Does this seem reasonable or is it a post-hoc justification?
   2. Do you see the importance of properly assigning utility in analyzing the game?
   3. Is the incomplete information game more or less *precise* than the pure self-interested game?
      a. What are the advantages / disadvantages of each game?