

ECON 204 Sec. 2

Quiz 7

Dr. Kevin Hasker

1. (3 Points) Please read and sign the following statement:

I promise that my answers to this test are based on my own work without reference to any notes, books, or the assistance of any other person during the test. I further promise not to aid others nor use any electronic device, including calculators.

Name and Surname: _____
 Student ID: _____
 Signature: _____

2. (6 points) What does it mean to be pivotal? In an election with one winner like President, if someone is voting as if they are pivotal what does it tell us about how they will behave?

Solution 1 *Someone is pivotal if when they change their vote they change the outcome of the election. In an election with one winner it means "choose the lesser of two evils" or choose the top two candidates and vote for whichever of them you hate the least.*

3. (11 points total) Consider the following economy with five outcomes and five people:

1	2	3	4	5		1	2	3	4	5	Tot	Agenda (A, C, D, E, B)
<i>E</i>	<i>C</i>	<i>A</i>	<i>E</i>	<i>B</i>	<i>E</i>	4	3	0	4	2	13	
<i>A</i>	<i>E</i>	<i>B</i>	<i>A</i>	<i>A</i>	<i>A</i>	3	2	4	3	3	15	
<i>D</i>	<i>A</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>D</i>	2	0	1	2	1	6	
<i>C</i>	<i>B</i>	<i>D</i>	<i>C</i>	<i>D</i>	<i>C</i>	1	4	2	1	0	8	
<i>B</i>	<i>D</i>	<i>E</i>	<i>B</i>	<i>C</i>	<i>B</i>	0	1	3	0	4	8	

1	2	3	4	5		1	2	3	4	5	Tot	Agenda (E, A, B, C, D)
<i>C</i>	<i>A</i>	<i>E</i>	<i>C</i>	<i>D</i>	<i>C</i>	4	3	0	4	2	13	
<i>E</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>E</i>	<i>E</i>	3	2	4	3	3	15	
<i>B</i>	<i>E</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>B</i>	2	0	1	2	1	6	
<i>A</i>	<i>D</i>	<i>B</i>	<i>A</i>	<i>B</i>	<i>A</i>	1	4	2	1	0	8	
<i>D</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>A</i>	<i>D</i>	0	1	3	0	4	8	

1	2	3	4	5		1	2	3	4	5	Tot	Agenda (D, C, E, A, B)
<i>A</i>	<i>C</i>	<i>D</i>	<i>A</i>	<i>B</i>	<i>A</i>	4	3	0	4	2	13	
<i>D</i>	<i>A</i>	<i>B</i>	<i>D</i>	<i>D</i>	<i>D</i>	3	2	4	3	3	15	
<i>E</i>	<i>D</i>	<i>C</i>	<i>E</i>	<i>A</i>	<i>E</i>	2	0	1	2	1	6	
<i>C</i>	<i>B</i>	<i>E</i>	<i>C</i>	<i>E</i>	<i>C</i>	1	4	2	1	0	8	
<i>B</i>	<i>E</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>B</i>	0	1	3	0	4	8	

1	2	3	4	5		1	2	3	4	5	Tot	Agenda (B, A, E, D, C)
D	A	B	D	C	D	4	3	0	4	2	13	
B	D	C	B	B	B	3	2	4	3	3	15	
E	B	A	E	D	E	2	0	1	2	1	6	
A	C	E	A	E	A	1	4	2	1	0	8	
C	E	D	C	A	C	0	1	3	0	4	8	

- (a) (4 points) If we use the Bordo count rule, where the count of a rank is the number of options it beats, which option will win the election? You may use the table below:

Solution 2 This is written by each version of the quiz above, apologies that it is not in alphabetical order. The one with the highest total wins.

- (b) (2 points) If everyone votes truthfully using plurality voting, what outcome will win the election?

Solution 3 Everyone should vote for their top ranked option, so the top ranked option of person 1 will win. This is also the Condorcet winner and the winner in part c.

- (c) (5 points) Consider the agenda (w, y, x, v, z) , and the standard committee voting rule. Just to make things simple I will outline it here:
- In round 1, everyone votes to accept (a) or reject (r) option w , with the majority of votes determining the outcome. If a , then the voting stops and w is accepted. If r then we go to the next round.
 - In round 2, they do the same with y . If a majority chooses a y is accepted and voting ends, otherwise we go the next round.
 - In round 3, they do the same with x .
 - In round 4, they either vote for v or z and whichever one the majority votes for is accepted.

Find the subgame perfect equilibrium outcome in each round and of the entire game. You should assume that people always vote as if they were pivotal.

Solution 4 In general the 4th item in the agenda is the Condorcet winner and will be the outcome of the game. In terms of their actual actions the majority will vote $(r, r, r, 4^{\text{th}}$ option). They should get one point for the outcome of the game and one point for the outcome of each round. They need to provide an argument for each round—though they do not need to explain who will vote with the majority.

I will provide detailed solutions for the problem:

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>C</i>	<i>A</i>	<i>E</i>	<i>C</i>	<i>D</i>
<i>E</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>E</i>
<i>B</i>	<i>E</i>	<i>A</i>	<i>B</i>	<i>C</i>
<i>A</i>	<i>D</i>	<i>B</i>	<i>A</i>	<i>B</i>
<i>D</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>A</i>

which has the agenda (E, A, B, C, D)

In the last round (2,3,4) prefer C to D thus will vote for C and that will win. (4th option)

In the next to last, (1,2,3,5) prefer C to B, thus they will vote for C and that will win (4th option). In terms of what they actually do they will reject B.

In the second round (1,4,5) will prefer C to A, thus they will vote for C by rejecting A.

In the first round (1,2,4) will prefer C to E, thus they will reject E. Notice that this verifies that C is the Condorcet winner, and that I am a terrible committee chairperson because if I had proposed it first their would have been only one round of voting.