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AJAE Appendix for "Supply Response to Counter-cyclical Payments and Base Acre Updating under Uncertainty: An Experimental Study

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## Experimental Instructions

## Instructions

## Welcome

Today you will participate in two experiments in the economics of decision-making that will take approximately two hours total to complete.

- If you follow the instructions carefully, you may earn a considerable amount of money.
- Both experiments are entirely separate, and information or instructions from one SHOULD NOT be confused with information for the other.
- In both experiments you will be asked to make a series of decisions. There are no right or wrong answers but the amount you will earn will depend upon the choices you will make and chance.
- The amount of money you earn in the first experiment will have no effect on the money you will earn in the second.
- You will be paid for both experiments in cash when we are finished.
- If at any time during either experiment you have any questions, please raise your hand and an experiment proctor will come to assist you, although they will not advise you.
- Please do not talk and do not try to communicate with any subjects during the experiment. If you have questions, please raise your hand.
- If you fail to follow these instructions you will be asked to leave and forfeit any moneys earned
- You can leave the experiment at any time without prejudice (forfeiting earnings).

Every time you wish to continue use your mouse to click the "Next" button located at the bottom-right hand side of screen.
To continue click the "Next" button now.
Part 1 Rules
You will soon be asked to make nine (9) choices. Each will ask you to choose between two options, labeled "Option A" and "Option B". The options will differ as follows: Option A: Option A always pays $\$ 2.50$ in cash.

Option B: There will always be two possible payoffs associated with Option B:

$$
\text { HIGH payoff: } \quad \$ 5.00
$$

LOW payoff:
\$0.00
Which payoff Option B pays is randomly determined by the computer drawing one of ten numbers.

For example;
Option A always pays $\$ 2.50$ no matter which number is chosen.
Imagine Option B has the numbers $\{1,2,3,4,5\}$ associated with the LOW payoff and $\{6,7,8,9,10\}$ associated with the HIGH payoff.

If you chose Option A you would receive \$2.50.
If you chose Option B the random draw between the ten numbers would determine your payoff. In this example if 3 were drawn you would receive the LOW payoff ( $\$ 0$ ); if 8 were drawn you would receive the HIGH payoff (\$5).

The results of this game will be displayed after Part 2 is complete in the following way:

1. A game will be selected at random
2. A number will be selected at random

Your payout will then be based on your selection of that game for Option A or Option B.
Do NOT discuss this with any other participants.
Click "Next" to go to Part 1.

## Part 1

Choose Option A or Option B for each game by clicking your choice where indicated. Click on "Next" when the nine decisions have been completed.

Game 1

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |
| :--- | :--- | :--- | :--- |

$$
6,7,8,9,10 \quad 6,7,8,9
$$

Circle your preferred Option: Option A Option B

## 

Game 2

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |
| :--- | :--- | :--- | :--- |

Circle your preferred Option: Option A Option B

Game 3

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |
| :--- | :--- | :--- | :--- |
|  | $\$ 2.50$ | 0.00 | $\$ 5.00$ |
|  | Numbers |  | Numbers |

Circle your preferred Option: Option A Option B
Game 4
OptionA Option B
Payoff:
\$2.50
0.00
\$5.00
Numbers Numbers Numbers
$1,2,3,4,5, \quad 1,2,3,4,5, \quad 7,8,9,10$ $6,7,8,9,10$ 6

Circle your preferred Option: Option A Option B
***************************************************************************
Game 5

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Payoff: | $\$ 2.50$ | 0.00 | $\$ 5.00$ |  |
|  | Numbers | Numbers | Numbers |  |
|  | $1,2,3,4,5$, | $1,2,3,4,5$ | $6,7,8,9,10$ |  |

Circle your preferred Option: Option A Option B
Game 6

OptionA
Option B

| Payoff: | $\$ 2.50$ | 0.00 | $\$ 5.00$ |
| :--- | :--- | :--- | :--- |
|  | Numbers | Numbers | Numbers |
|  | $1,2,3,4,5$, | $1,2,3,4$ | $5,6,7,8,9$, |
|  | $6,7,8,9,10$ |  | 10 |

Circle your preferred Option: Option A Option B

Game 7

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |
| :--- | :--- | :--- | :--- |
|  | $\$ 2.50$ | 0.00 | $\$ 5.00$ |
|  | Numbers | Numbers | Numbers |
|  | $1,2,3,4,5$, | $1,2,3$ | $4,5,6,7,8$, |
|  | $6,7,8,9,10$ |  | 9,10 |

Circle your preferred Option: Option A Option B
************************************************************************
Game 8

|  | OptionA |  | Option B |  |  |
| :--- | :--- | :--- | :--- | :---: | :---: |
| Payoff: | $\$ 2.50$ | 0.00 | $\$ 5.00$ |  |  |
|  | Numbers |  | Numbers |  |  |
|  | $1,2,3,4,5$, | 1,2 | Numbers |  |  |
|  | $6,7,8,9,10$ |  | $3,4,5,6,7$, |  |  |
|  |  |  | $8,9,10$ |  |  |

Circle your preferred Option: Option A Option B
************************************************************************
Game 9

|  | $\underline{\text { OptionA }}$ | $\underline{\text { Option B }}$ |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Payoff: | $\$ 2.50$ | 0.00 | $\$ 5.00$ |  |
|  | Numbers | Numbers | Numbers |  |
|  | $1,2,3,4,5$, | 1 | $2,3,4,5,6$, |  |
|  | $6,7,8,9,10$ |  | $7,8,9,10$ |  |

Circle your preferred Option: Option A Option B

## Part 2 Overview

In this experiment you will be given three cases in three sessions. The cases in each session may or may not be the same. The case instructions will be given along with this overview. If you forget these instructions they will be available to you during the experiment in the "Help" tab on the upper bar of your screen. Click on "Help" then choose the instructions you wish to view. A summary of the differences between the case instructions has also been provided.

In each separate case you will make decisions that determine your earnings. A session is 10 rounds; so the experiment lasts for a total of 30 rounds.

The amounts shown in the given cases are in lab dollars. At the end of the experiment you will be paid in cash at the exchange rate of 2000 lab dollars per $\$ 1$.

You will have 100 tokens each round. You choose how many of the 100 tokens to invest in each of two colors- Blue and Red. You may allocate these tokens, in whole number increments, in any manner across the two colors as long as all 100 tokens are invested. For example, depending on the round, you might decide to invest 50 in Blue - 50 in Red; or 0 in Blue - 100 in Red; or 90 in Blue - 10 in Red; etc.

You will enter your choice below the Blue and Red Table by clicking on the box and entering a number between 0 and 100 for Blue or Red. When you have made your final decisions click the "Next" button.

This decision must be done within the time limit displayed in the upper-left hand corner of the screen. There is also a bar graph in the upper-right hand corner to illustrate the remaining time available. Failure to make a decision within the time limit will results in zero earnings for the round.

In each round there are three possible prices for each color. The program will display the probability that each price may be realized in each round in the Blue and Red Table.

After you decide how to allocate tokens between Blue and Red, a random draw will determine the realized price for Blue; a second random draw will determine the price for Red.

Your lab dollar earnings will be determined by one of three Earning Tables. An Earning Table shows how the program will calculate your round earnings. The case instructions will inform you which Earning Table/s is applicable for that case and give you the table/s.

The program will display your earnings after you enter your choices and click "Next".
You may also view your earnings in previous rounds of the same case by clicking the "View Cumulative Case _ Results" button.

Each session has four steps:
Step 1. The program informs you of the case you will consider for the session.
Step 2. In each round the program will show the possible prices and probabilities for each price for both colors. Make your decision on how to allocate your 100 tokens between Red and Blue.
Step 3. Once the allocation has been entered the program conducts the random draw to determine the Blue price and a random draw to determine the Red price. The program will display both prices. Based on the realized
prices, the program will compute and record your lab dollar earnings for that round.
Step 4. Steps 2 and 3 will be repeated for the remaining rounds in the session.
You will be given the option of using the Decision Tool. The Decision Tool is a type of calculator that (given a choice of Blue and Red) will give probabilities and earnings for each scenario in each round in matrix and graphical form. If you forget this information it will be available to you during the experiment in the "Help" tab under "Decision Tool".

To enter a choice into the matrix, enter a combination of Blue and Red tokens below the Blue and Red tables. Then click the "Update Table" button on the bottom-left hand side of the Decision Tool area.

The matrix displays the probability and earnings for each scenario if the corresponding prices are the realized prices. For example, the box that matches-up the Blue zero price and Red zero price lists the probability and earnings of that outcome occurring for your Blue/Red choice.

Above the matrix the current combination is shown along with the total expected value and total variance of that choice. The total expected value and variance are probability weighted and include potential bonuses.
If you enter more than one set of Blue and Red tokens the newest entry will be shown in the matrix. To display all the combinations entered with a chart and table click the "Decision Calculator" button on the bottom-right hand side of the Decision Tool area. A table and chart with the expected value and variance of all previous entries will be displayed.
Be aware that the scale on the expected value and variance axes can change as you enter more choices and across rounds.
You may enter as many different Blue/Red combinations as you wish but keep in mind that there is a time limit.

Part 2 Case 1 Rules
You have 100 tokens to allocate between Blue and Red in each round. For each color, there are three possible prices - Zero, a Low Price, and a High Price. The realized price is the actual price that is displayed after the program performs the random draw.

In each round you may earn BONUS1. The lab dollar value of BONUS1 will be shown to you at the beginning of each round and may differ across rounds.

The program will use Earnings Table 1 to determine your round by round earnings in Case 1. Although the program will use the Red price that is randomly drawn - Zero, the Low Price, or the High Price - the three possibilities in the Earning Table below contain the "Red Realized Price" for illustrative purposes.

## Earnings Table 1

If the realized Blue price is:

The ZERO Price:
BLUE $=$ \$0 * \# Blue Tokens = \$0
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
Total Earnings $=\$ 0+$ RED $\$+$ BONUS1 $\$$
The LOW Price:
BLUE\$ = Blue Low Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$
The HIGH Price:
BLUE $=$ Blue High Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$

## Part 2 Case 1 Rules

## Steps for Case 1:

1. Look at both of the color options for Case 1. The program displays the possible prices, probabilities of the prices for each color, and the lab dollar value of BONUS1. Choose how you will distribute the 100 tokens across Blue and Red.
2. After you have made the choice, the program will conduct the random draw for the Blue price and Red price and show the realized prices. Based on the realized prices, the program will compute and record your lab dollar earnings for that round.
3. Steps 1 and 2 will be repeated for 10 total rounds.

## Case 1 Quiz

1. In each round you must use all 100 tokens by choosing between Blue and Red.

T or F
2. Once you decide on an allocation for round one that choice must be the same every round.
T or F
3. Realized prices are determined based on a random draw between the given price probabilities.
T or F
4. The Red realized price can only be low or high.

T or F
5. Only Earning Table 1 applies to calculating earnings.

T or F
6. BONUS1 must be the same round to round.

T or F
7. You will receive BONUS1 only if the Realized Blue Price is the Blue Low Price. T or F

## Part 2 Case 2 Rules

You have 100 tokens to allocate between Blue and Red in each round. For each color, there are three possible prices - Zero, a Low Price, and a High Price. The realized price is the actual price that is displayed after the program performs the random draw.

In each round you may earn BONUS1. The lab dollar value of BONUS1 will be shown to you each round it is available and may differ across rounds.

In each round depending on the BLUE price, you MIGHT receive either BONUS2 or BONUS3. The lab dollar value of the Bonuses will be displayed each round. If the Zero Blue Price is drawn, you will receive BONUS2; if the Low Blue Price is drawn, you receive BONUS3; and if the High Blue Price is drawn you do NOT receive either BONUS2 or BONUS3. The amount of the bonuses can differ across rounds.

The program will use Earning Table 2 to determine your round by round earnings in this case. Although the program will use the Red price that is randomly drawn - Zero, the Low Price, or the High Price - the three possibilities in the Earning Table below contain the "Red Realized Price" for illustrative purposes.

## Earnings Table 2

If the realized Blue price is:
The ZERO Price:
BLUE $=$ \$0 * \# Blue Tokens = \$0
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
BONUS2\$ = BONUS2\$
Total Earnings = \$0 + RED\$ + BONUS1\$ + BONUS2\$
The LOW Price:
BLUE\$ = Blue Low Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
BONUS3\$ = BONUS3\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$ + BONUS3\$
The HIGH Price:
BLUE = Blue High Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$

## Steps for Case2:

1. Look at both of the color options for Case2. The program displays the possible prices, the probabilities of the prices, and the lab dollar value of BONUS1, BONUS2, and BONUS3. Choose how you will distribute the 100 tokens across Blue and Red.
2. After you have made the choice, the program will conduct the random draw and display the realized Blue price, and the realized Red price. Based on the realized
prices, the program will compute and record your lab dollar earnings for that round.
3. Steps 1 and 2 will be repeated for 10 total rounds.

Case 2 Quiz

1. In each round you must use all 100 tokens by choosing between Blue and Red. T or F
2. Once you decide on an allocation for round one that choice must be the same every round.
T or F
3. Realized prices are determined based on a random draw between the given price probabilities.
T or F
4. The Red realized price can only be low or high.

T or F
5. In Case 2 only Earning Table 2 applies to calculating earnings.

T or F
6. For Case 2, the realized Red price determines if BONUS2 or BONUS3 is earned. T or F
7. For Case 2, the realized Blue high price outcome leads to BONUS3 being earned. T or F
8. The amount of BONUS2 and BONUS3 can change round by round.

T or F

## Part 2 Case 3 Rules

You have 100 tokens to allocate between Blue and Red in each round. For each color, there are three possible prices - Zero, a Low Price, and a High Price. The realized price is the actual price that is displayed after the program performs the random draw.

In each round you may earn BONUS1. The lab dollar value of BONUS1 will be shown to you each round it is available and may differ across rounds.

For each round of this case, one of Earning Table 1, Earning Table 2, or Earning Table 3 will apply. The probabilities that each earning table will be the realized table will be given. Based on the probabilities, the computer will determine the Realized Earning Table by a random draw. Your lab dollar earnings will be determined based on the Realized Earning Table and the realized prices.

You are given Earning Table 1, Earning Table 2, and Earning Table 3. Although the program will use the Red price that is randomly drawn - Zero, the Low Price, or the High
Price - the three possibilities in the Earning Tables below contain the "Red Realized Price" for illustrative purposes.

## Earnings Table 1

If the realized Blue price is:
The ZERO Price:

$$
\begin{aligned}
& \text { BLUE\$ = \$0 * \# Blue Tokens = \$0 } \\
& \text { RED\$ = Red Realized Price * \# Red Tokens } \\
& \text { BONUS1\$ = BONUS1\$ } \\
& \text { Total Earnings = \$0 + RED\$ + BONUS1\$ } \\
& \text { The LOW Price: } \\
& \text { BLUE\$ = Blue Low Price * \# Blue Tokens } \\
& \text { RED\$ = Red Realized Price * \# Red Tokens } \\
& \text { BONUS1\$ = BONUS1\$ } \\
& \text { Total Earnings = BLUE\$ + RED\$ + BONUS1\$ } \\
& \text { The HIGH Price: } \\
& \text { BLUE\$ = Blue High Price * \# Blue Tokens } \\
& \text { RED\$ = Red Realized Price * \# Red Tokens } \\
& \text { BONUS1\$ = BONUS1\$ } \\
& \text { Total Earnings = BLUE\$ + RED\$ + BONUS1\$ }
\end{aligned}
$$

## Earnings Table 2

If the realized Blue price is:
The ZERO Price:
BLUE $=\$ 0$ * \# Blue Tokens = \$0
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
BONUS2\$ = BONUS2\$
Total Earnings = \$0 + RED\$ + BONUS1\$ + BONUS2\$
The LOW Price:
BLUE $=$ Blue Low Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
BONUS3\$ = BONUS3\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$ + BONUS3\$
The HIGH Price:
BLUE $=$ Blue High Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
BONUS1\$ = BONUS1\$
Total Earnings = BLUE\$ + RED\$ + BONUS1\$
If Earning Table 3 is the realized table and depending on your allocation choice, you MIGHT receive Realized BONUSES. Realized Bonuses are a percentage of the given Bonuses based on how you choose to invest tokens between BLUE and RED each round that Earning Table 3 is the realized table.

Realized Bonus $=$ Bonus * $(\#$ Blue Chosen/100)
The lab dollar value of the potential bonuses will be given to you in each round.
Regardless of the Blue Price you will receive Realized BONUS1. If the Zero Blue Price is drawn, you will receive Realized BONUS2. If the Low Blue Price is drawn, you receive Realized BONUS3; if the High Blue Price is drawn you do NOT receive either

Realized BONUS2 or Realized BONUS3. The amount of the potential bonuses can differ across rounds.

## Earnings Table 3

If the realized Blue price is:
The ZERO Price:
BLUE $=$ = 0 * \# Blue Tokens = \$0
RED\$ = Red Realized Price * \# Red Tokens
Realized BONUS1\$ = BONUS1\$ * (\# Blue/100)
Realized BONUS2\$ = BONUS2\$ *(\# Blue/100)
Total Earnings = \$0 + RED\$ + Realized BONUS1\$ + Realized
BONUS2\$
The LOW Price:
BLUE\$ = Blue Low Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
Realized BONUS1\$ = BONUS1\$ * (\# Blue/100)
Realized BONUS3\$ = BONUS3\$ *(\# Blue/100)
Total Earnings = \$0 + RED\$ + Realized BONUS1\$ + Realized
BONUS3\$
The HIGH Price:
BLUE\$ = Blue High Price * \# Blue Tokens
RED\$ = Red Realized Price * \# Red Tokens
Realized BONUS1\$ = BONUS1\$ * (\# Blue/100)
Total Earnings = BLUE\$ + RED\$ + Realized BONUS1\$

## Steps for Case3:

1. Look at both of the color options for Case 3. The program displays the probabilities of the earnings tables, the possible prices, the probabilities of the prices, and the lab dollar value of BONUS1, BONUS2, and BONUS3. Choose how you will distribute the 100 tokens across Blue and Red.
2. After you have made the choice, the program will conduct the random draw and display the realized earning table, the realized Blue price, and the realized Red price. Based on the realized earning table and prices, the program will compute and record your lab dollar earnings for that round.
3. Steps 1 and 2 will be repeated for 10 total rounds.

## Case 3 Quiz

1. In each round you must use all 100 tokens by choosing between Blue and Red.

T or F
2. Once you decide on an allocation for round one that choice must be the same every round.
T or F
3. Realized prices are determined based on a random draw between the given price probabilities.
T or F
4. The Red realized price can only be low or high.

T or F
5. In Case 3 only Earning Table 3 applies to calculating earnings.

T or F
6. The Realized Earning Table could be Earning Table 1, Earning Table 2, or Earning Table 3 and is determined by a random draw between the specified probabilities.
T or F
7. You will know which earning table is the Realized Earning Table before you make your allocation decision.
T or F
8. If Earning Table 3 is randomly chosen and you invested all tokens in Red, you might receive a positive realized bonus.
T or F

