Instructions on how to use the matlab codes for Eozenou, Rivas and Schlag (2006): "Minimax Regret in Practice: Four Examples on Treatment Choice"

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Abstract

This paper presents a guide on how to apply to any given data set on treatment effects the matlab codes used in Eozenou, Rivas and Schlag (2006): "Minimax Regret in Practice: Four Examples on Treatment Choice".

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1 Preliminaries

In order to use the codes, you should have a copy of the matlab software. In case you don't have the matlab software, you can buy it or get a free trial at *http://www.mathworks.com/*.

First, you have to get the matlab codes. They can be obtained in a zip file called *Minimax Regret in Practice Four Examples on Treatment Choice- Matlab codes.zip* from any of the websites of the authors:

- *http://www.iue.it/Personal/Researchers/JavierRivas/* (Javier Rivas)

- *http://www.iue.it/Personal/Researchers/eozenou/research.html* (Patrick Eozenou)

- *http://www.iue.it/Personal/Schlag/Welcome.html* (Karl Schlag)

You should unzip the file wherever you want. The zip file contains two files and one folder. The *.pdf* file gives instructions on how to use the matlab codes for Eozenou, Rivas and Schlag (2006), it is the same as the file you are currently reading. The Excel file called *Experiments_Round_1.xls* contains a data set. In this instruction manual we explain as an example how to run the matlab codes using this data set. Finally, the folder called *Matlab codes* contains the codes of the program.

No knowledge of matlab is required to use the codes. The only thing that may need a bit of effort from the user is the preparation of the data set. This is explained in the next section.

2 Preparing the data

Preparing the data to use the codes is very simple. Here we present two examples on how to prepare the data given that you have the original data in (1) an Excel file and (2) any other type of file.

2.1 Preparing the data from an Excel file

Imagine that our original data set is the file *Experiments - round 1.xls*. The file contains the results on the round 1 for all countries of the experiments run by Roth et al (1991). For more information on this data set the reader is referred to Roth et al (1991) and Eozenou, Rivas and Schlag (2006).

Each country (Israel, Japan, Yugoslavia and USA) represents a treatment. For each country, the first column (A, D, G and J) represents the ID of the offerer and the second column (B, E, H and K) represents the outcome of the treatment on a particular subject.

For preparing the data for Israel one should proceed as follows:

1. Open Matlab software.

2. Open the file *Experiments - round 1.xls.*

3. In the excel window, select with the mouse the data set of **one** treatment (in this case, the cells B2:B31).

4. Copy the selected cells (by pressing *Ctrl+c, Edit->Copy* or *Right-click and Copy*).

5. Within the matlab window, go to the *Workspace* window (if it is not visible click on *Desktop->Workspace*).

6. In the *Workspace* window click in the *new variable* icon and put a name to your new variable (in this example, we call it *Israel*).

7. Double-click in the variable you just created, the *array editor* window should appear.

8. In the *array editor* window, Right-click in the cell 1,1 of the variable we just created an click on *paste.*

9. In the *array editor* window, click on *save.*

10. Write a name and specify a location for the matlab data file you have just created (in this example we call the file *DataIsrael.mat* and we place it on *c:\experiments*)

And this is it. To prepare the data for the other countries one should just follow the steps above described. At the end, we should have four matlab files. For instance, these could be *DataIsrael.mat, DataJapan.mat, DataYugoslavia.mat* and *DataUSA.mat* all placed in *c:\experiments.* One very important thing to note here is that you need to put *two* names in this process. One is the name of the *variable* you are creating (step 6) and the other is the name of the *file* you are creating (step 10). These two names can be the same but it is very important to keep track of them as they are to be used in the code.

2.2 Preparing the data from other types of files

The easiest way to prepare the data is to transform it into an Excel file and then to follow the steps explained above. To transform a data set into an Excel file please consult the Excel's references.

3   Running the code

The following steps explain how to run the code given in the two matlab files containing the outcomes of the treatments. Using the data set provided, we now explain how to choose the better treatment between Israel and Yugoslavia with the *Binomial Average Rule* (i.e without the Variance Reduction Trick), as described in Eozenou, Rivas and Schlag (2006).

1. Prepare the data for the two treatments as explained in the previous section

2. Open the Matlab software

3. Within the matlab window, go to the *Current Directory* window.

4. Set as the current directory the folder where the matlab codes are (for example *c:\Minimax Regret in Practice - Matlab codes\Matlab codes*)

5. Within the *Current Directory* window, double-click on the file *Main.m*

6. A new window with the matlab editor should open. In this window is where we should modify all parameters in the appropriate way given our data set. In our example this could read:

   (a) *Load the data from a .mat file*
       load('c:\experiments\DataIsrael.mat');
       load('c:\experiments\DataYugoslavia.mat');

   (b) *Name the treatments given the variable names*
       treatment_1 = Israel;
       treatment_2 = Yugoslavia;

   (c) *Maximum and minimum theoretical interval for the value of the variables*
       lower_interval = 0;
       upper_interval = 10;

   (d) *Binomial Average Rule or Paired Sample? (0=BAR, 1=PS)*
       method = 0;

   (e) *With or without Variance Reduction Trick? (0=without, 1=with)*
       VA_trick = 0;

   (f) *Accuracy of the result (even number, 4 yields about two decimals accuracy)*
       accuracy = 4;

7. Once you have filled in all this camps, press *F5* in the keyboard or click on *Debug->Run*

8. Within the matlab window, the *Command Window* should display the result.

And that's it. If you want to perform the same comparison but with the Variance Reduction Trick, you should write VA_trick = 1 in step 6.e. If the comparison you are making is a Paired Sample you should write method = 1 is step 6.d, etc...

4 Errors

The code has its own error detector system. If an error is detected by the code it is reported to the user together with a recommendation on how to correct it. However, it may happen that a non standardized error happens during the code. In this case, matlab will report to the user the characteristics of the error. In this case, the user is encouraged to contact javier.rivas@iue.it for technical support.