

## **Introduction to Microfit: Exercises**

### **Introduction**

These exercises introduce you to Microfit 4.1, a very powerful interactive econometrics package that is also relatively easy to use. It has a clear structure of screen editors and windows facilities for data processing, file management, graphic display, estimation, hypothesis testing and forecasting windows. It is driven by icons and written commands.

It is important that you follow the steps exactly the first time you use the package. You will soon get used to moving through the screens to find the task you want. When typing in commands always use the "return" / "enter" key at the end.

### **More details and further exercises are in the manual:**

Pesaran, M. H. and Pesaran, B. "MICROFIT 4.0, Windows version", 1997, Oxford University Press, ISBN 0-19-268531-7.

See also [carecon.org.uk/BUE/Econometrics/](http://carecon.org.uk/BUE/Econometrics/)

## **EXERCISE 1**

### **1. Getting Started**

Logon to the network and access Microfit

### **2. Data Input:**

- Click on File and choose the New option
- Choose Annual as the data frequency
- Give 1977 as the Start year and 1987 as the End year
- Give 2 as the number of variables
- Click on OK

In the next window overwrite X1 and X2 with RC and RPDI respectively and insert descriptions of the variables, RC is real consumption, RPDI is real personal disposable income.

Click on Go

Now input the following data in the relevant cells

	RC	RPDI
1977	176.0	195.6
1978	186.0	209.9
1979	193.8	221.7
1980	193.8	224.9
1981	193.8	222.2
1982	195.6	221.7
1983	204.3	227.9
1984	207.9	232.4
1985	215.3	237.8
1986	226.8	244.8
1987	238.5	252.2

When you have finished you can check and edit if necessary and when you are ready click on Go.

There are a number of icons above the data window with Variables, Data, Process etc on them:

- Click on Variables to check the information you have input, then click on Close
- Click on Data to check the inputted data (same window)
- Click on Process to get to the data processing screen.

### 3. Data Processing

You are now in the main screen and can undertake various tasks. For now:

a. Check the data:

- Type LIST RC RPDI
- Click on Close

b. Compute variables:

- Compute the savings ratio type:  $S=(RPDI-RC)/RPDI$   
Then click Go
- Compute a constant type:  $C=1$   
Then click Go
- Take logs of variables type:       LRPDI=LOG(RPDI);  
  LRC=LOG(RC);  
  LS=LOG(S);

Then click Go.

The ; allows you to run more than one command at a time.

You can also compute other transformations in the same way. For example first differences for DC would require  $DRC=RC-RC(-1)$ .

c. Plot variables over time: Type:

PLOT RPDI

PLOT RC

PLOT S

PLOT RPDI RC

Click on Go after each of these and on Close in the graphics Window

d. Plot variables against each other: Type

XPLOT RPDI RC

Click on Go

Click on Close

e. Get simple descriptive statistics and correlations: Type

COR RPDI RC

Click on Go

(You should get correlation coefficient of 0.9676)

Click on Close

After you have done all of these type click on the Single icon, which will give you the Linear regression - Ordinary Least Squares screen.

#### 4. Running a Regression

Click on the empty window and type in the dependent variable a constant and the independent variable as follows:

RC C RPDI

and then click on the Start icon.

This will give you regression results and various statistics. They should be equivalent to:

$$\text{RC} = \begin{array}{cc} -52.21 & + 1.13 \text{ RPDI} \\ (-2.4) & (11.5) \end{array}$$

$$R^2 = 0.94 \qquad \text{DW} = 0.596$$

You can print this out or save to

Further possible statistics are offered when you click on the Close icon. For the moment choose no. 3 (List/plot/save residuals and fitted values) and then click on OK.

## 5. Analysing the Residuals

Choose the option no. 3 Plot residuals and click on Ok

You will now see a plot of the residuals

It should be clear that there are problems with this regression!

You can print this graph out or save to a file using icons at the top left.

- Click on Close to return to the menu
- Accept option 0, Return to the Post Regression Menu
- Choose option 0, Return to Backtracking Menu
- Choose option 1, Return to Single Equation Estimation Window

## 6. Saving Data and Variables

- Click on File menu
- Choose Save As option
- Give the filename MAEG1.FIT

- Specify a directory and drive or floppy disk
- Accept the first and last observations offered by clicking on OK

- Exit from Microfit:

Either go to the File menu and choose Exit.

Or click on the X in the top right hand corner. Click on OK when you receive the warning about data being lost as you have already saved it.

### **7. Using saved FIT files**

- Start Microfit again.
- Click on the File menu and choose Open
- Give the filename MAEG1.FIT

Note that you may have to specify a drive or directory, depending on where you saved the file.

You are now back with your data and all of the variables you created above are still there.

Check that this is the case by using the icons and then rerun the regression

You can now either exit or move on to exercise three, by clicking on the File menu and choosing the option Open

## EXERCISE 2

The steps below only provide instructions. You will need to go through the same procedures as in Exercise 1 to complete the tasks.

1. Enter Microfit

2. Click on the File menu and choose the Open option. Give the filename as MAEG2.FIT with the directory/disk details. This file contains data for 1959-87 on consumption and income

3. Using OLS, estimate the linear model:  $RC = a + b \text{RPDI}$

4. Estimate a log-linear model:  $LRC = a + b \text{LRPDI}$   
where  $LRC = \text{LOG}(RC)$  and  $\text{LRPDI} = \text{LOG}(\text{RPDI})$

5. Estimate an extended model introducing inflation:  $LRC = a + b \text{LRPDI} + c \text{DLPC}$

Where the inflation term DLPC is constructed using:

$LPC = \text{LOG}(PC)$

$\text{DLPC} = LPC - LPC(-1)$

6. Consider the results for each of these regressions and why each one improves on the previous one.

7. To consider how to interpret multiple regression.

-Make a note of the results of the extended model (parameter estimates/ t ratios/ DW/ Rsq)

-Estimate  $LRC = a_1 + b_1 \text{DLPC}$

-Save the residuals. Give them the name RES1

-Estimate  $\text{LRPDI} = a_2 + b_2 \text{DLPC}$

-Save the residuals as RES2

-Estimate  $\text{RES1} = a_3 + b_3 \text{RES2}$

You will see that  $b_3$  is the same as  $b$  (the estimate in the extended model). Consider what this tells you about the interpretation of parameter estimates in multiple regression analysis.